

# Chemical Week

July 21, 1956

Price 35 cents



**Look what's happening in seaweed colloids: sales are \$10 million/year now, and growing fast . . . p. 57**

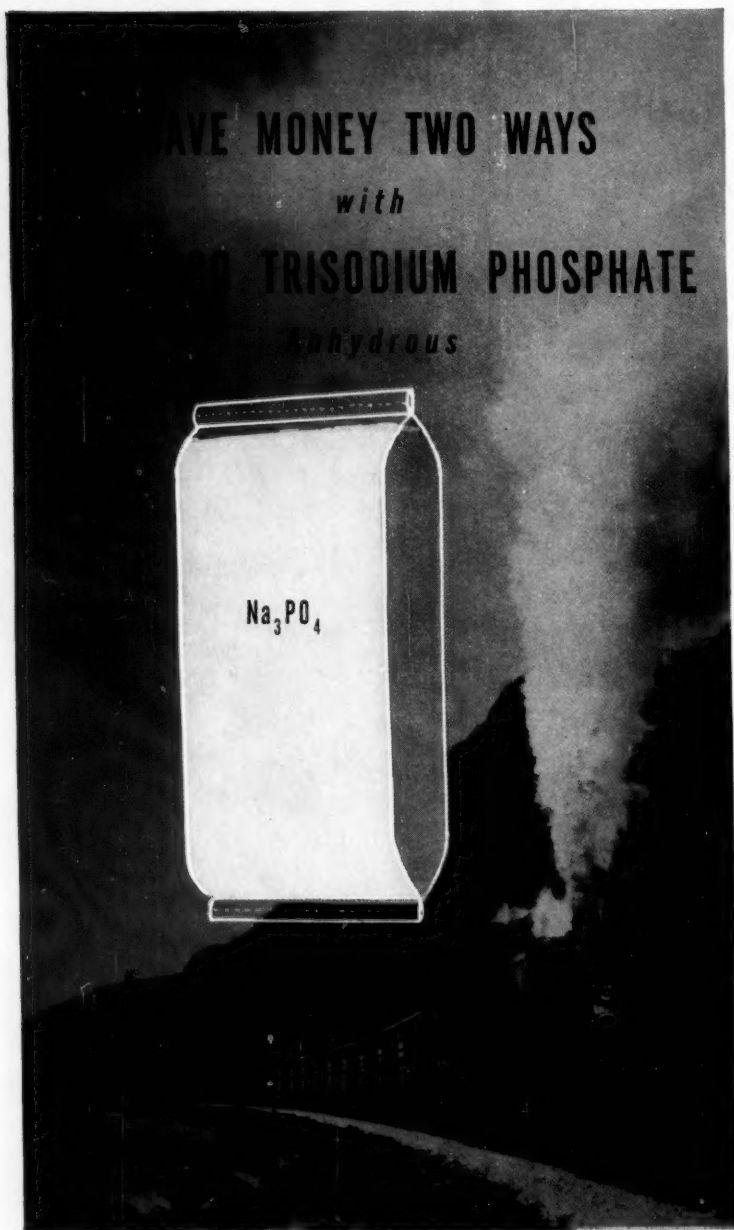
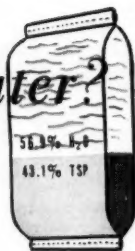
► **Union Bag's Ralls, Doran expect big things of new distillation-derived tall-oil acids . . . . p. 88**

**Hooker wants Oldbury in order to round out its line. Here's where the deal stands . . . . . p. 27**

**No electioneering on the premises. That's what chemical management will tell eager campaigners . p. 35**

► **Lures of Panama's free zone: cheap labor, low taxes, short hop to South American markets . . p. 122**

*why get soaked for shipping water?*



**SAVE MONEY TWO WAYS**  
with  
**WESTVACO TRISODIUM PHOSPHATE**  
*Anhydrous*

If you use TSP crystals, you regularly pay delivery charges on substantial quantities of water. To be specific, 56.9% of what you buy is *nothing else but!*

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Per hundred-weight, Westvaco TSP Anhydrous costs less, too. So you can save real money two ways by switching now to free-flowing, quick-dissolving Westvaco TSP Anhydrous. A request for a "delivered-price" quotation will tell you exactly how much.

\* L.C.L. delivery 250 miles from production point.



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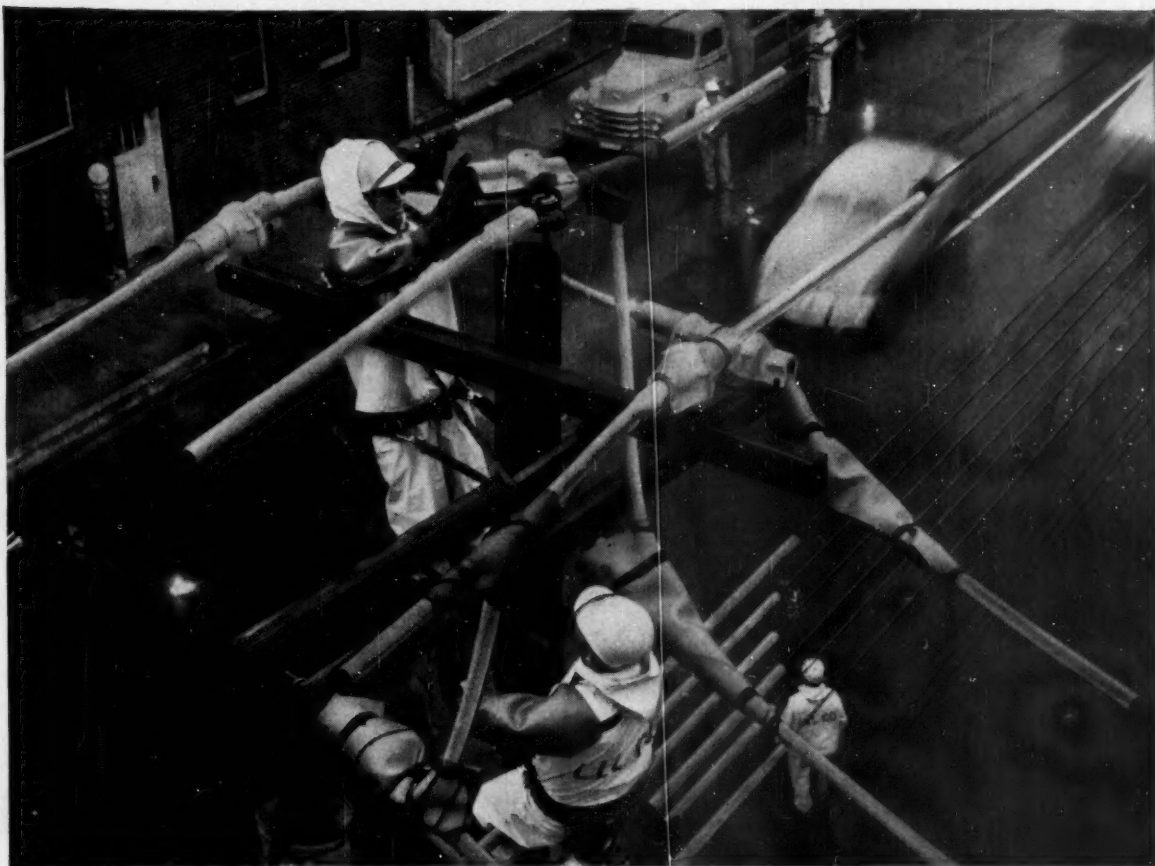
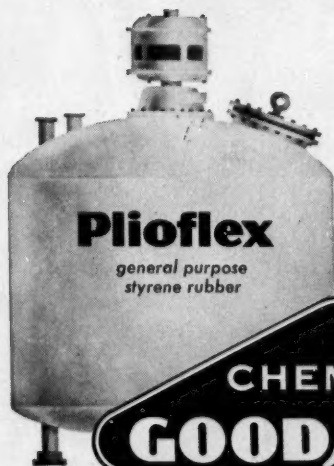
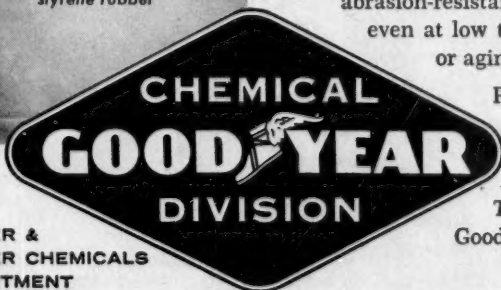


Photo courtesy Hodgman Rubber Company, Framingham, Mass., and Long Island Lighting Co., Mineola, L. I.

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Take the linemen's suits pictured above. It's essential they provide warm, comfortable protection and full freedom of action. They also must be long wearing and retain their bright color for safety through visibility. That's why they're made of a fine count fabric proofed with PLIOFLEX.

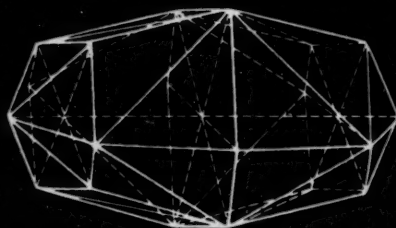
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RESEARCH AND DESIGN



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No. California: WILLIAM C. LOUGHLIN & CO., 311 California St., San Francisco 4, Calif.

# Chemical Week

TOP OF THE WEEK

July 21, 1956

**The Congressional record for '56:** what it means to the chemical industry .....p. 28

**Ashtabula becomes a pollution trouble spot.** Here's the latest from "Withering Heights" .....p. 30

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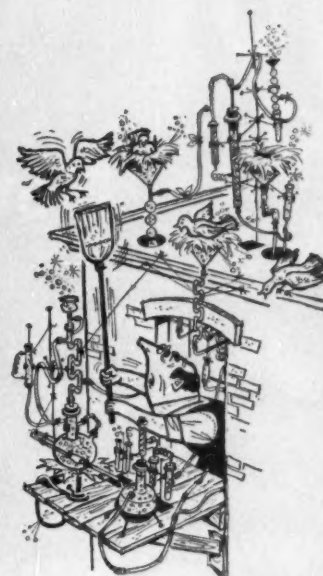
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It's better

to get it from

Eastman . . .

Sure, when you need an uncommon organic (or an uncommonly pure one) in more-than-test-tube and less-than-tank-car quantities, try Eastman Organic Chemicals Department, Distillation Products Industries, Rochester 3, N. Y.

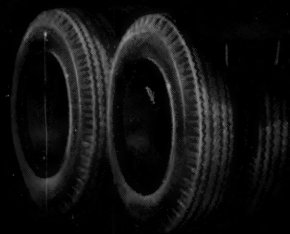


there are some 3500  
Eastman Organic Chemicals  
for science and industry

**DISTILLATION PRODUCTS INDUSTRIES**  
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# New TRAILMOBILE acid



↑ TRAILMOBILE

*The secret is exterior ring design!* ►

# tank trailer...

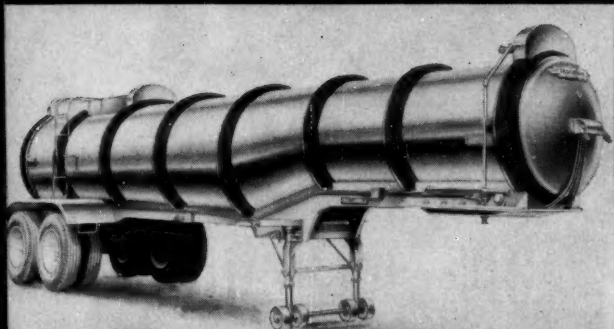
## has THOUSANDS of POUNDS more payload capacity

*The new Trailmobile Model CH Acid Tank Trailer gives you big, extra payload capacity amounting to as much as 100 pounds for every 100 gallons of capacity built into the tank.*

**The secret is exterior ring design!** Brawny rings of steel reinforce the new light gauge shell allowed by regulation codes. This unique design lightens the trailer by thousands of pounds while retaining structural strength.

This new Trailmobile Model CH incorporates every money-saving feature of previous Trailmobile models. It is available in high tensile steel, stainless steel or aluminum with a variety of coatings and linings to handle all types of corrosive and non-corrosive fluids. Insulated models are also available where load temperatures need to be maintained.

*Check on the CH before you buy.* TR-478



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Recorded Case Histories  
on Thousands of Jobs  
Like This . . .

This antibiotics processing unit depends on Hills-McCanna — the trouble-free way to valve hard-to-handle fluids.

## Provide the Know-How That Saves You Trouble and Expense in Valving Corrosives

The sum total of twenty years experience in valving virtually every conceivable corrosive substance is recorded in the application service records of Hills-McCanna. Here is proved on-the-job data on how to handle over 1000 corrosives . . . specific information on the best diaphragm materials and the best body and pipe materials. For you it means materials recommendations based on facts—not guesswork.

Put this know-how to work for you on your corrosion resistant valving problems by submitting these problems to Hills-McCanna. In Hills-McCanna valves you are offered a choice of 36 bonnet assemblies, 14 diaphragm materials and 27 body materials—a total of 9,121 ways to valve corrosives. To have full information at hand, ask for the Hills-McCanna valve catalog.



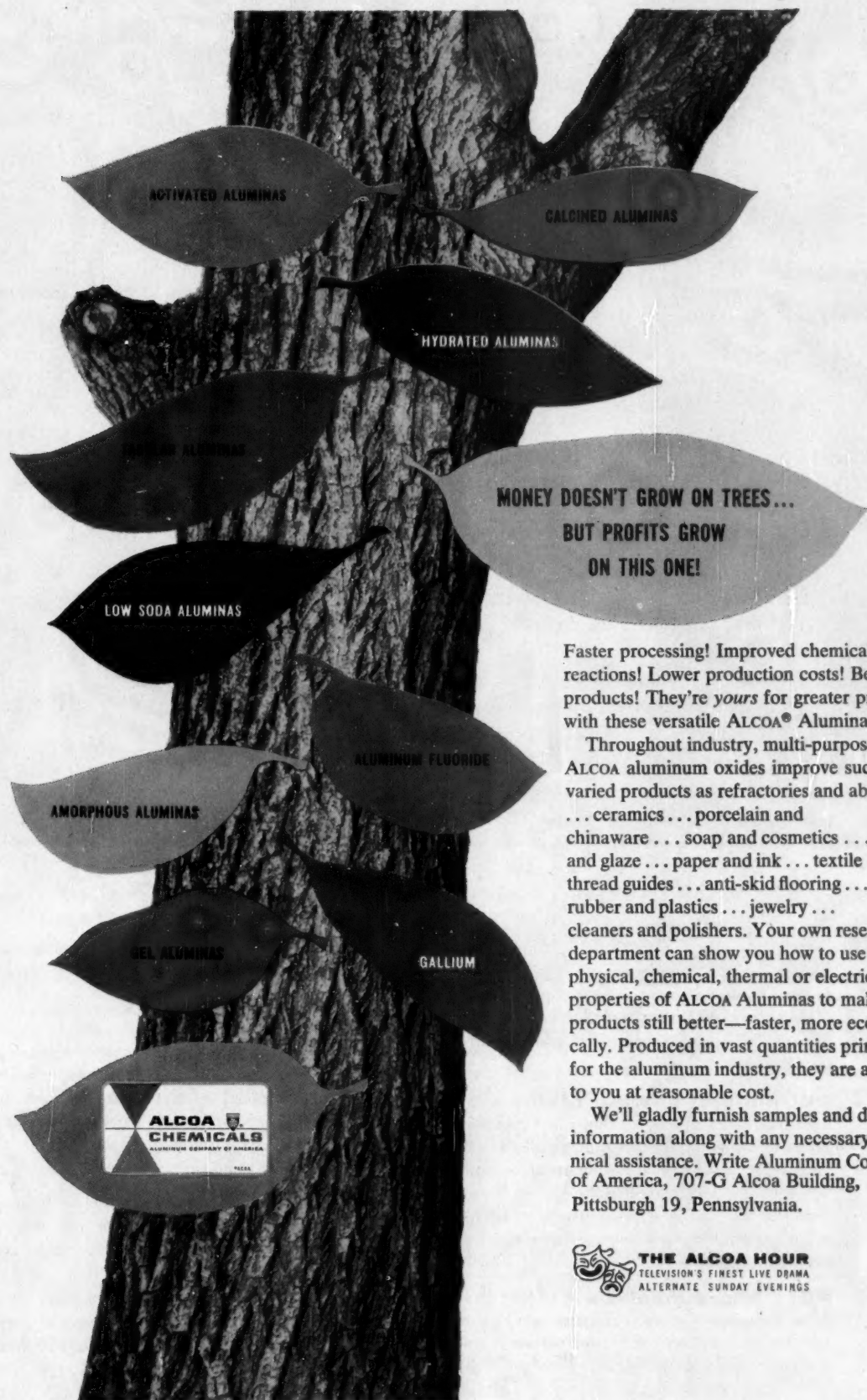
# HILLS-McCANN

*Corrosion Specialists  
Since 1870*

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Manufacturers of: Saunders Patent Diaphragm Valves • Chemical Metering and Proportioning Pumps • Force Feed Lubricators • Light Alloy Castings



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Faster processing! Improved chemical reactions! Lower production costs! Better products! They're *yours* for greater profit with these versatile ALCOA® Aluminas.

Throughout industry, multi-purpose ALCOA aluminum oxides improve such varied products as refractories and abrasives . . . ceramics . . . porcelain and chinaware . . . soap and cosmetics . . . glass and glaze . . . paper and ink . . . textile thread guides . . . anti-skid flooring . . . rubber and plastics . . . jewelry . . . cleaners and polishers. Your own research department can show you how to use the physical, chemical, thermal or electrical properties of ALCOA Aluminas to make *your* products still better—faster, more economically. Produced in vast quantities primarily for the aluminum industry, they are available to you at reasonable cost.

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**THE ALCOA HOUR**  
TELEVISION'S FINEST LIVE DRAMA  
ALTERNATE SUNDAY EVENINGS

from Van to "Vanity"...

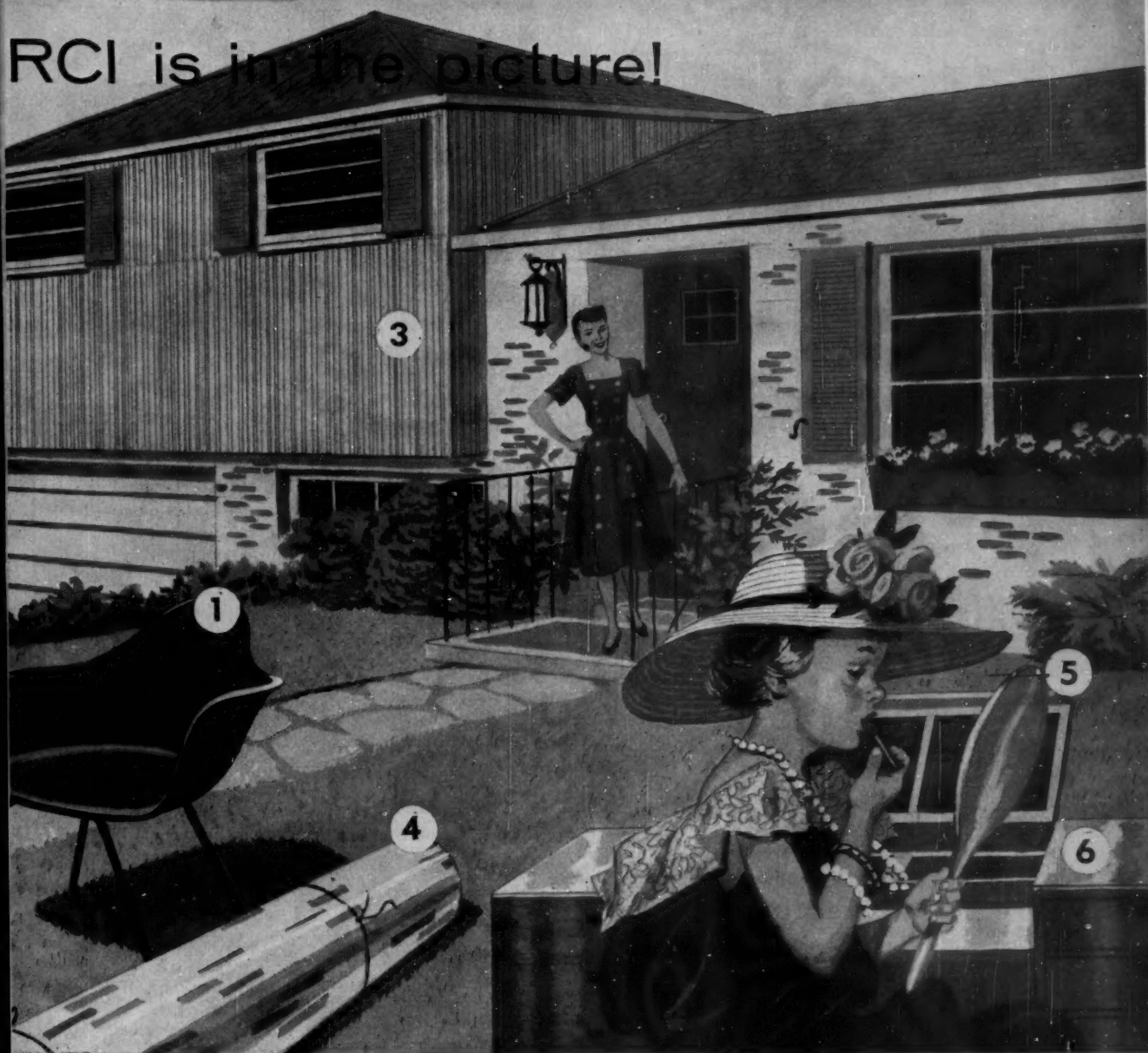


**Which of these materials do you need? Call RCI!**

- 1 RCI polyester resins** — reinforced with fibrous glass are used for durable truck vans two to three thousand pounds lighter than comparable metal vans. Other RCI polyesters can be used for colorful modern chairs and easily-cleaned lampshades.
- 2 RCI surface coating resins** — are used internationally by leading paint manufacturers to formulate finishes ranging all the way from refrigerator and auto enamels to exterior house paints. Latest addition to the extremely complete RCI line is a series of new melamine resins which give many improved properties to baking enamels.
- 3 RCI resin adhesives** — include "hot press phenolics" for water-resistant bonding of exterior grade fir plywood . . . and polyvinyl acetate and urea-formaldehyde furniture glues.
- 4 RCI pentaerythritol** — finds an important use today in the manufacture of tough, durable linoleum coatings.
- 5 RCI formaldehyde** — like other RCI basic chemicals is important to a tremendous range of industries . . . for tonnage uses and for specialized jobs (waterproofing straw hats and silvering mirrors, for example). RCI's network of plants and warehouses is geared to fill the needs of any user, large or small.
- 6 RCI phenolic resins** — are widely used in filler sheets for laminated plastic tops on vanities, tables, counters . . . in molding compounds for plastic furniture drawers.

The next time you have a supply problem (or a technical one), see where fast delivery of these quality-controlled RCI materials (or any of those listed with our signature) can help you.

# RCI is in the picture!



**MALEIC ANHYDRIDE**—Reichhold produces and sells this important basic chemical; and uses it in making POLYLITE polyester resins. RCI MALEIC is available in pellet form as an added convenience.



**GREATER PAYLOADS**—Exterior, interior and structural members of this insulated van are made by Strick Co. from reinforced RCI POLYLITE. Reichhold operates 3 of these weight-saving vans.



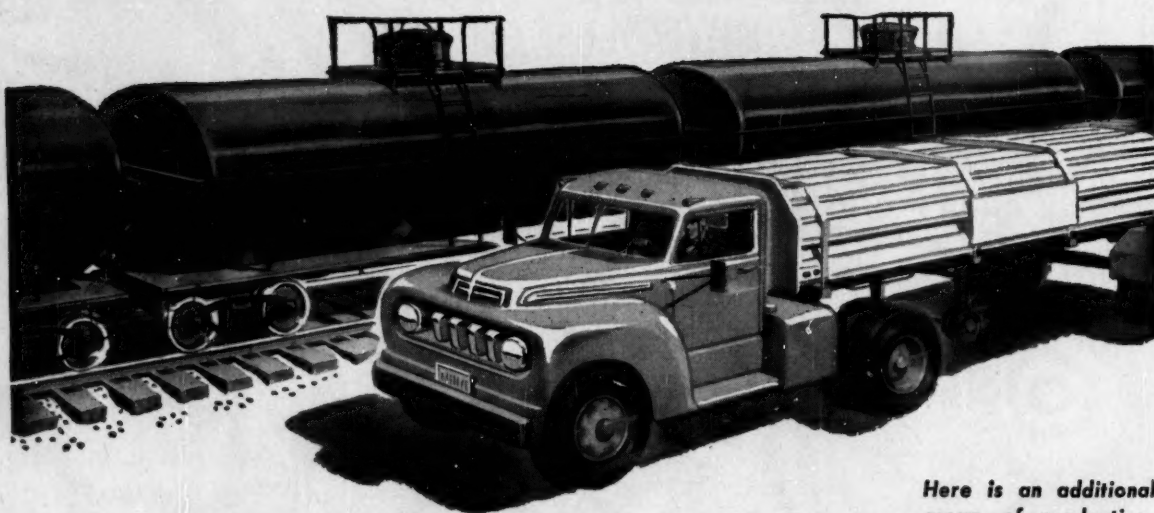
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If required, you are invited to draw on the knowledge and experience of our staff of technical specialists on fluorides. Broadly, we offer you the benefit of our accumulated experiences in engineering problems involving corrosion, safe handling and storage facilities.

**WRITE for Harshaw's 40-page Book on Hydrofluoric Acid Anhydrous. It provides helpful data for you if you now use HF or are considering its use.**

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Los Angeles • New York • Philadelphia • Pittsburgh

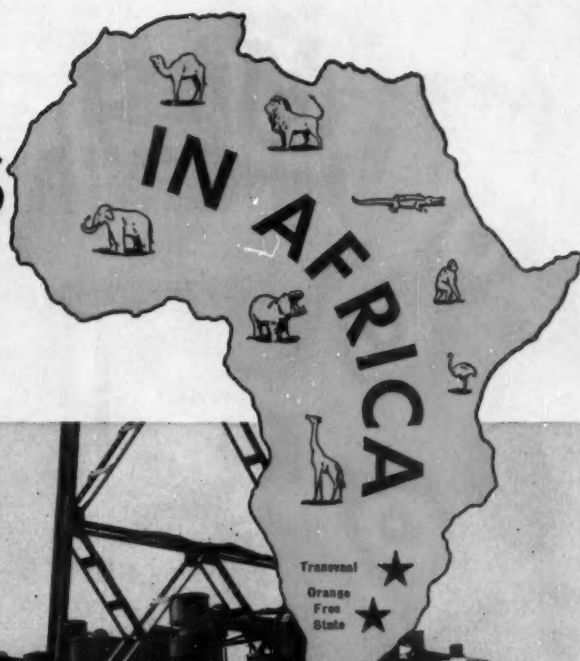
*Here is an additional group of production-controlled, high-quality fluorides:*

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Ammonium Fluoborate  
Antimony Trifluoride  
Sublimed  
Barium Fluoride  
Bismuth Fluoride  
Boron Trifluoride  
Boron Trifluoride  
Complexes  
Chromium Fluoride  
Copper Fluoborate  
Fluoboric Acid  
Fluorine Cells  
Fluorinating Agents  
Frosting Mixtures  
Hydrofluoric Acid  
Anhydrous  
Hydrofluoric Acid  
Aqueous  
Hydrofluosilicic Acid  
Lead Fluoborate  
Metallic Fluoborates  
Potassium Bifluoride  
Potassium Chromium  
Fluoride  
Potassium Fluoborate  
Potassium Fluoride  
Potassium Titanium  
Fluoride  
Silico Fluorides  
Sodium Fluoborate  
Tin Fluoborate  
Zinc Fluoborate  
Zinc Fluoride



# Once...Waste Today...**PROFITS**

via **CHEMICO**  
*Sulfuric Acid Plants*



Waste material, once separated and discarded during gold processing operations, is today yielding profits in uranium recovery via sulfuric acid.



The pyritic concentrates shown above, stripped of gold and uranium, serve as raw material for making sulfuric acid, which in turn is then used to recover uranium from gold processing waste.

Today, SEVEN plants of Chemico design are turning out 1100 tons of sulfuric acid per day in the Transvaal and the Orange Free State of South Africa exclusively for the recovery of uranium . . . just another example of how **CHEMICO SULFURIC ACID PLANTS** are being employed in making profits out of by-product industrial wastes.

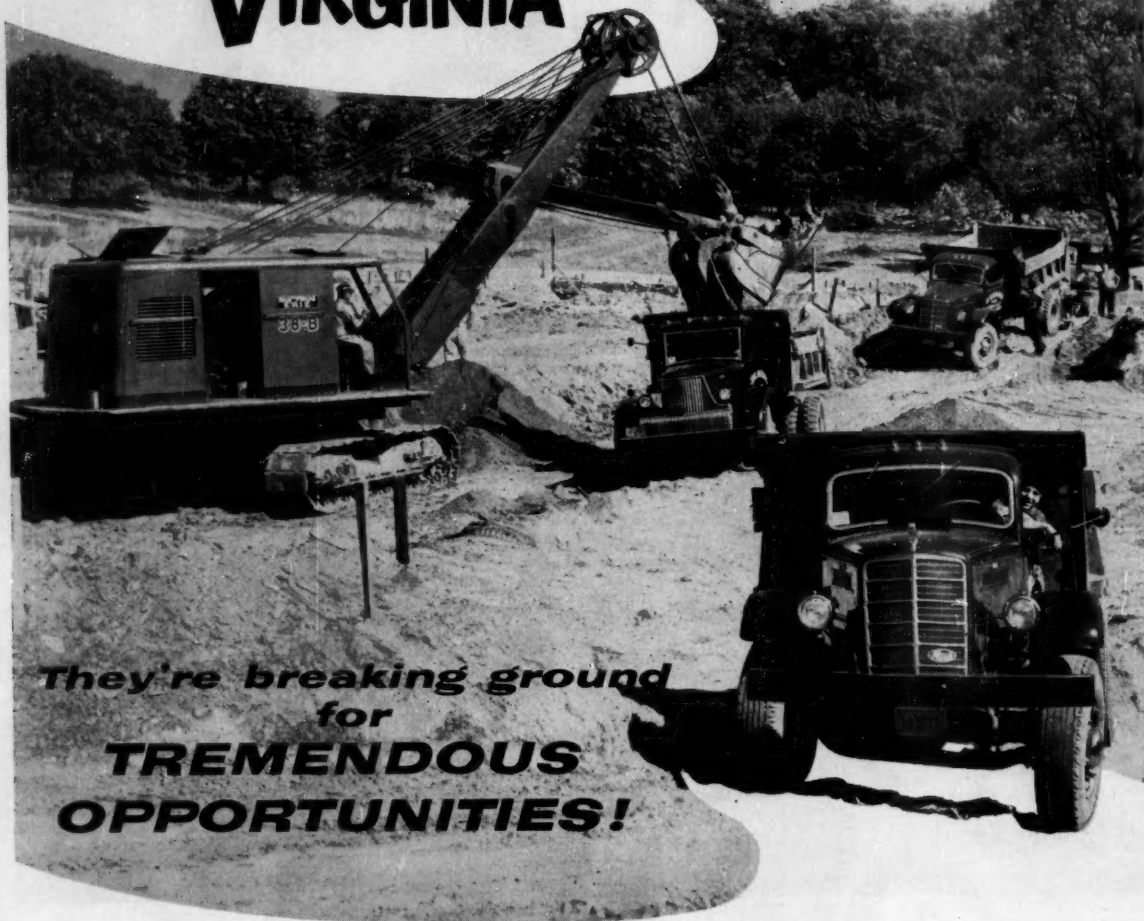
## **CHEMICAL CONSTRUCTION CORPORATION**

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South African Cyanamid (Pty) Ltd., Johannesburg*

# in **WEST VIRGINIA**



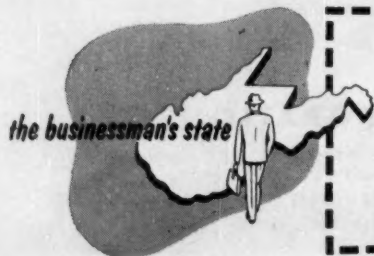
*They're breaking ground  
for  
**TREMENDOUS  
OPPORTUNITIES!***

Over a recent 5-year period the production of chemicals in West Virginia increased 40 per cent more than the average of the rest of the nation. The capital expenditures which made this possible were for a large number and variety of chemical products rather than the expanded production of a few. Every month great opportunities are being opened up in West Virginia.

For the chemical industry and those industries it serves these opportunities for a successful future are unrivalled. Nearness to primary materials, and to the large markets are among the leading favorable factors. But, there are

many more. Labor is versatile, and in adequate supply. Power at favorable rates, a fair tax situation, cooperative civic and governmental bodies, these await industry in West Virginia.

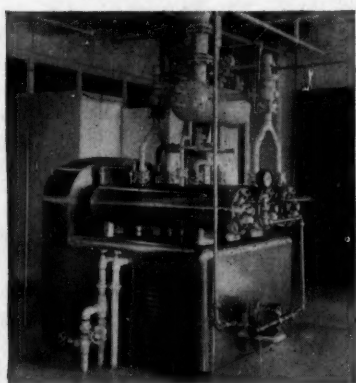
West Virginia will provide you with any specific information you may want relative to a location within the State, whether you are a manufacturer of basic chemicals or a fabricator of plastics. The fact worth remembering is—the great chemical companies have found profitable growth in West Virginia.



Industries whose plans include expansion or dispersion should inquire about The Business Man's State—WEST VIRGINIA. Write or phone: Andrew V. Ruckman, Executive Director, West Virginia Industrial & Publicity Commission, State Capitol Building, Room 777, Charleston 5, West Virginia.



## 24 ways to make profits



**Push-button operation:** Here, high-speed cooling . . . automatically controlled . . . improves the uniformity of gel. This VOTATOR Continuous Cooling Apparatus drops product temperature in seconds.

### Results of high-speed heat-transfer by **GIRDLER**

Here's a sure key to better quality and lower costs in the manufacture of products such as the 24 shown on this page:

Girdler's VOTATOR\* Processing Apparatus continuously heats or cools viscous and liquid materials at rates of six to ten times those of conventional batch methods. This rapid heat transfer, plus simultaneous agitation vastly improves quality control, processing-efficiency and output-rates for a wide range of products and processing functions.

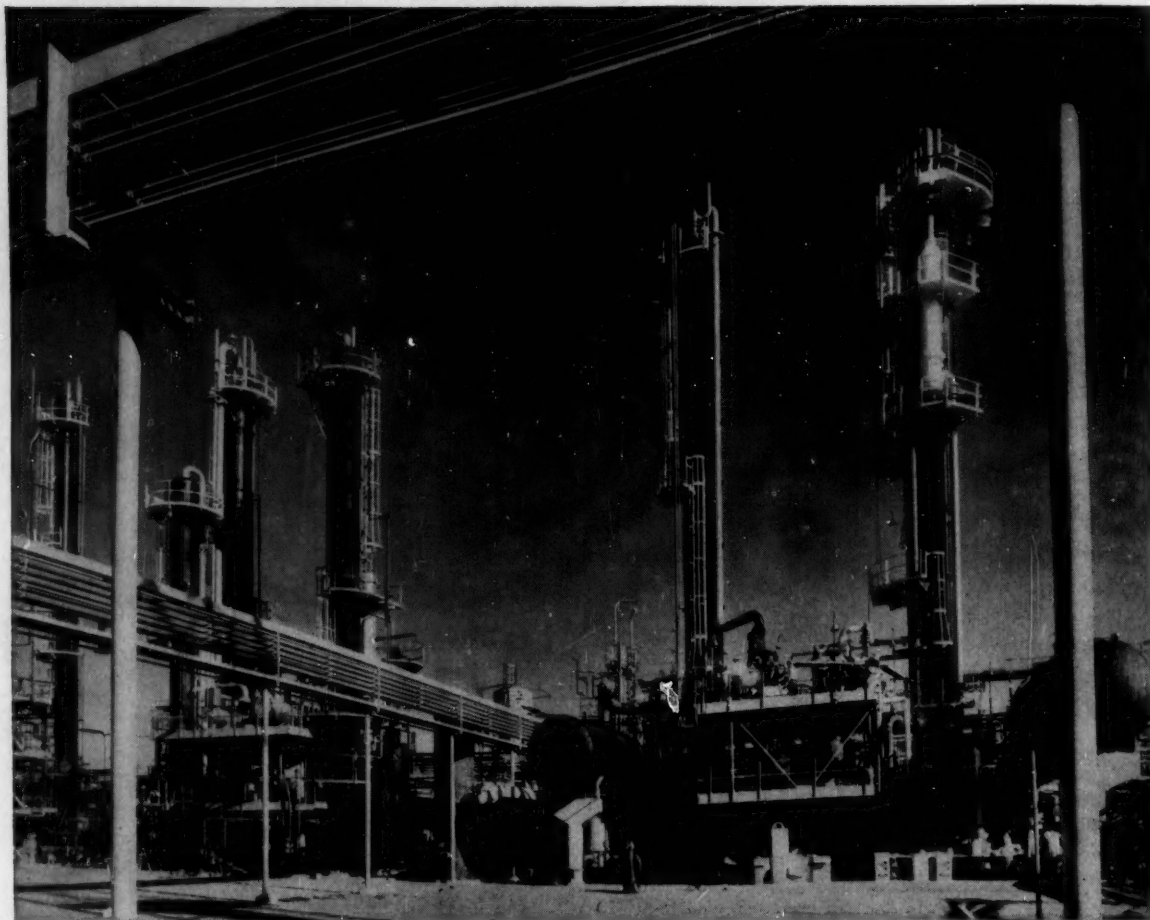
If you manufacture any product involving heat-sensitive or viscous liquids, you cannot afford to overlook this unique processing method! Girdler engineers will gladly advise you on your application. Call our nearest office today.

\*VOTATOR—Trade-Mark Reg. U. S. Pat. Off.

## The **GIRDLER** Company

A DIVISION OF NATIONAL CYLINDER GAS COMPANY  
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Now in its second year on stream at Gibbstown, New Jersey, the East's newest phenol plant has already become one of the leading sources of supply. Here Hercules produces high-quality U.S.P. synthetic phenol by the cumene oxidation process.

Prompt shipment in tank cars, tank trucks or drums from this modern plant is available. You may save time and labor if you explore the economy in receiving phenol by tank truck in molten form. Let us discuss this service with you.

**HERCULES**



Oxychemicals Division  
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N056-3



## better protection against corrosion!

Corrosion of metals, the age-old problem of paint chemists, is getting a real going over with "wash primers" based on Shawinigan Resins' FORMVAR and BUTVAR . . . poly-vinyl formal and butyral resins.

These anti-corrosive primers, sometimes referred to as metal conditioners, apply easier, adhere better, dry faster than more conventional materials. In addition, they assure a better foundation for paint systems while preventing underfilm corrosion. Wash primers prevent corrosion in a threefold protective action. First, an inorganic phosphate film is formed at room temperature rather than in the usual hot bath; second, the primers provide a steady stream of chromate ions to fill any pin holes in the film; finally, a tanned polymeric acetal film which provides outstanding mechanical protection forms over the phosphate film. All this is accomplished in one operation.

The wash primer protective coating of only 0.3 to 0.8 mil thickness, is a tough, corrosion resistant conditioner for steel, aluminum, cadmium, tin, galvanized iron and magnesium. Formulation of a system is easy in your regular ball or pebble mill.

The use of "wash primers" has extended the life of metals in many applications and has opened profitable new markets for paint manufacturers. For full technical information, resin samples and suggested formulations, write Shawinigan Resins Corporation, Department 1129, Springfield 1, Massachusetts.

**FORMVAR® and BUTVAR® resins by**





*Worried...*

**about rancidification?**

## **New Ionol<sup>®</sup>, C. P.-impregnated cartons and wrappers protect flavor and aroma ... prolong shelf life**

YOU KNOW WHAT a serious, ever-present threat to shelf life rancidification is. Here's a new, simple, yet extremely effective way to combat it—Ionol, C.P. antioxidant.

Rancidity usually begins with fats and oils that have migrated to the surface of packaging materials. But, when boxboard and paper are impregnated with Ionol, C.P. antioxidant, they give dependable protection to aroma and flavor by effectively preventing oxygen attack on fats.

In actual tests, baked goods were stored

at 85°F in Ionol, C.P.-impregnated boxboard cartons, which were found to be free of rancidity at the end of ninety days. Without Ionol, C.P. protection, packages of baked goods stored under similar conditions often develop rancidity within a week.

You can insure long shelf life and protection of your brand label's good name by asking for packaging materials containing Ionol, C.P. antioxidant. Write to Shell Chemical for names of suppliers of new Ionol, C.P.-impregnated packaging.

### **SHELL CHEMICAL CORPORATION**

**CHEMICAL SALES DIVISION, 380 Madison Avenue, New York 17, New York**

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# Business

## Newsletter

CHEMICAL WEEK  
July 21, 1956

**ICI and Hercules will build a methyl methacrylate plant** at Louisiana, Mo., under terms of an agreement signed Monday afternoon at Wilmington. A new, jointly owned company will be set up to build and operate the plant, which will cost \$11 million, produce 35 million lbs./year of the methacrylate. The new company will make and sell both monomer and polymer.

The plant will be built on a 20-acre site that adjoins Hercules' ammonia and methanol plant at Louisiana. It will use natural gas—available from an adjacent natural gas pipeline—and ammonia to make hydrogen cyanide, which then reacts with acetone—produced by Hercules at Gibbstown, N.J.—and with methanol from the adjacent plant to make the methacrylate.

**Here's what the deal means to ICI:** It is the first basic chemical plant in the U.S. for the pre-eminent British chemical manufacturer. It broadens ICI's competition with Du Pont, one-time partner with ICI in many chemical enterprises throughout the world. It will give the joint company the know-how in research, production and technical sales service that ICI has gained in some 20 years of manufacture of the material, known in Great Britain as Perspex.

**Here's what it means to Hercules:** a broadening of its line of thermoplastic materials. It now produces cellulose acetate and low-pressure polyethylene. It will give the joint venture its know-how in U.S.-type production, and an established sales setup for thermoplastics.

**Here's what it means marketwise:** Only two companies, Rohm & Haas and Du Pont, now make methacrylate monomer in the U.S. R&H's probable capacity: about 50 million lbs./year; Du Pont's is currently about 25 million. But Du Pont is doubling its capacity, and R&H will have several new raw materials and acrylic monomer units on line late this year and in '57.

It isn't likely these expansions will discourage other firms from entering the field. And don't look only at the large producers of plastics raw material as possible entries. While some of the biggest chemical firms have studied methacrylates, there may also be competition from such companies as Escambia Bay Chemical and El Paso Natural Gas.

**El Paso, incidentally, is looking at chemicals** as a way to diversify its current pipeline operations. It has joined General Tire and United Carbon in building a butadiene plant at Odessa, Tex., and it may build a styrene plant if current negotiations for a long-term sales contract are successful.

El Paso is also looking into possible production of polyethylene, acrylonitrile, polyvinyl chloride. The company hopes to get into the ammonia business by buying an operating plant. While it is already active in uranium, it

## Business Newsletter

(Continued)

is also interested in such metals as thorium, titanium and zirconium, but has nothing definitely planned in these fields.

**There'll be a second producer of magnesium, too,** if present plans go through. While the official announcement won't come until late this week, trade sources say that the newcomer will be Brooks & Perkins (Detroit), which, until now, has been a magnesium fabricator only. The company will use the ferrosilicon process, which results in magnesium of a higher purity (at a higher cost) than the technique used by the current producer, Dow Chemical.

**Stauffer Chemical,** though it isn't revealing capacity figures, will begin commercial-scale production of boron trichloride by boosting capacity at Niagara Falls, N.Y., 10-fold. When the unit (which uses a new fluid-bed manufacturing process) starts up next February, the company will be able to ship the material in one-ton cylinders and in tank-car quantities. The material, in addition to being the "essential base" of some high-energy and missile fuels, finds use in producing metallic boron and other boron chemicals. Currently under study: possible uses as a catalyst.

### **Acquisitions and stock purchases also highlight the week's news:**

Southern Natural Gas, which has held a 10% interest in Air Reduction for about two years, is buying more stock. Is the purchase merely an investment? Or is there a possibility that the pipeline firm may want to work out a merger? Company President C. P. Rather says only: "We considered the purchase desirable."

Dominion Tar & Chemical has bought a 16% interest in the Howard Smith Paper Mills Ltd. Reported price: \$13 million. There's speculation in Canadian financial circles that Smith's 14-man board might be expanded to 18 to allow representation of Dominion's stock holdings.

**The week's acquisition:** Archer-Daniels-Midland has purchased a half-interest in Applied Radiation Corp. (Walnut Creek, Calif.) for an undisclosed sum. A-D-M's angle: radiation processing. It wants in on the ground floor of the business, which it feels may someday be one of the most important commercial phases of atomic energy use. ARCO makes linear accelerators suitable for industrial radiation and food sterilization.

### **There were two antitrust rulings last week that involved chemicals.**

The Tenth Circuit Court of Appeals upheld a district court conviction of Morton Salt (Chicago), Royal Crystal Salt (a Morton subsidiary), Deseret Livestock Co. and Deseret Salt Co. (both of Salt Lake City) on a price-fixing charge. Meanwhile, Columbia Naval Stores of Savannah, Inc., and Turpentine and Rosin Factors (Jacksonville), with some subsidiaries and officers, have been held liable by a federal court for \$454,215 for damages (to a group of turpentine farmers) resulting from turpentine price-fixing.

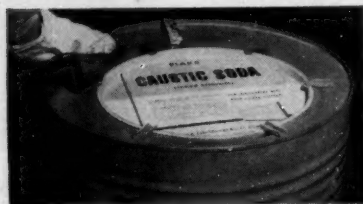
# BRIEFS

for buyers of

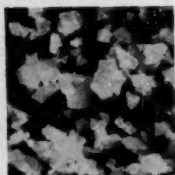
## Sodium Sulfide Sodium Sulphydrate Flake Caustic Soda

**Especially good for repackaging** (as in cleansers and other specialties) are these four sizes of Hooker flake caustic soda, all shown actual size.

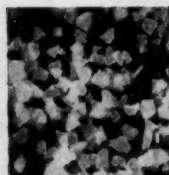
"Regular," "fine," and "crystal" sizes are nondusting. And with these flakes, you're sure of actually getting the size you order. In a tightly-controlled flaking-screening operation, we make the flakes just thick enough to stand up well and stay the same size in transit.



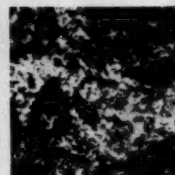
Regular



Fine



Crystal



Powdered

Regular flake is shipped in 100-lb. and 400-lb. steel drums; the other sizes in 450-lb. steel drums. The larger drums come in two styles: 14-inch

opening (extra large for easy emptying), or full open head (at slight extra cost).

For data sheet, check the coupon. For test samples, just write and tell us the sizes you'd like.

**A tanner could tell you** what can happen when sodium sulfide picks up iron.

When this happens in a tannery, the leather is likely to develop blue blotches.

The five steps we take to help tanners avoid this situation hold meaning for you, if you process with sodium sulfide.

1. We use only our own caustic soda in making sulfide. This gives us close control of its composition.
2. We never re-use a sulfide drum. You receive every shipment in brand new containers.
3. Every drum is lacquer-lined to prevent iron contamination.
4. Six sturdy lugs hold the drum lid tight during handling and storage. They're handy for re-sealing the drum, too.
5. We individually lacquer the lid of every drum, to make an airtight seal that keeps the product at full strength.

The clean, strong flakes dissolve right into process, even without stirring. No waiting; no decanting.

You've probably gathered by now that sodium sulfide, at Hooker, is a specialty of the house. You're right. And that's a good reason why you stand to get maximum satisfaction with ours.

The flake form is shipped in 90-lb. and 350-lb. drums. Solid form comes in 625-lb. drums. Why not order a trial quantity?

### Better pH control

What we said about sulfides also goes for Hooker sodium sulphydrate, with this important difference:

Some processors are switching to our sulphydrate, as a replacement for sodium sulfide. Why?

When sulphydrate goes into solution, it forms less caustic soda than does sodium sulfide. Only half as much, in fact. So these processors are able to get more sulfidity, with less alkalinity, by using sulphydrate. Maybe there's an idea here for your processing operations, if high pH is a problem in sulfide solutions.

Hooker sodium sulphydrate dissolves rapidly, even in cold water. There's virtually no sedimentation even after long standing. You can get it in 90-lb. and 350-lb. drums. For more details, check the coupon.

### For Technical Data Sheets

on Hooker chemicals mentioned on this page, check here:

- ☐ Sodium Sulfide
- ☐ Sodium Sulphydrate
- ☐ Caustic Soda

**How up-to-date** is your caustic data file? If you're a user of liquid caustic soda, here's some recent material to help you buy better:

- ☐ Caustic Soda Buyer's Guide. Pocket-size booklet lists advantages of 73% and 50% caustic concentrations; comparative costs; includes nomograph for figuring savings with 73%.

Clip and mail today with your name, title, company address.



From the Salt of the Earth

**HOOKEE ELECTROCHEMICAL COMPANY**

7072 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

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# Suds Shines and SELLS

The growing preference for liquid detergent formulations is showing up in the sales picture . . . last year there was a phenomenal industry-wide increase in these sales.

And no wonder . . . liquid detergent formulations offer real economy; instant solubility in any water; a pleasing fragrance; sneeze-free washing; dishes that dry shining bright; no sink scum to scrub away.

Many of today's best-selling liquid detergents are formulated with Atlantic ULTRAWETS. Economy is one reason. High performance characteristics allow a saving on the quantity needed to maintain product efficiency. Add to this saving a further one: you can buy the ULTRAWETS at significantly low prices in tank car or bulk lots.

Ask us for detailed information on the ULTRAWETS. Our Chemical Products Sales Division can supply formulations, or help you develop your own. Write, wire, phone or send the coupon today.

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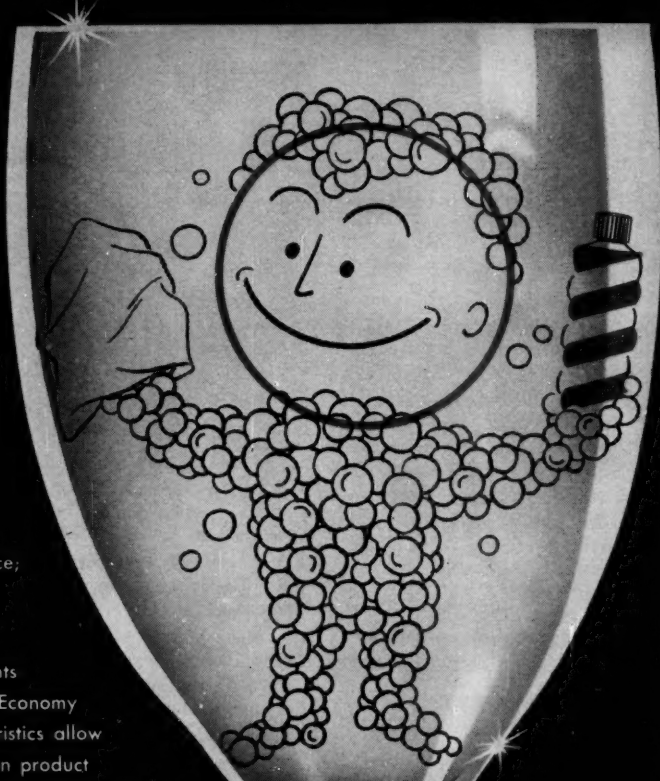
Please send me information on the ULTRAWETS for  
liquid detergent formulations.

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Firm

Street

City  Zone  State



The ULTRAWETS wet, penetrate,  
clean and emulsify



# Chemical Week

July 21, 1956

Vol. 79, No. 3

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## In Wood Flour Security of Supply is Vital

Security of supply is a vital consideration in selecting a source, or sources, for wood flour. One reason is the combustible nature of wood flour during milling.

Wilner has two wood flour plants — completely separated — completely redesigned and rebuilt in 1951 — each plant safety engineered from the ground up.

In addition, the Wilner Company controls its own raw materials and its transportation, with elaborate rail facilities and its own fleet of trailer vans, to assure dependable deliveries under any conditions.

### Typical Analysis 60 Mesh Wood Flour

Thru	On	%
	60	0
	80	2
140		76.8

### Among the users of Wilner Wood Flour

ARMSTRONG CORK CO.  
 BIRD & SON  
 BONAFIDE MILLS, INC.  
 GENERAL ELECTRIC CO.  
 ROHM & HAAS CO.  
 STANDARD TANK & SEAT CO.

For samples,  
further  
information  
and  
specifications,  
please write:



Dept. N-3D

Wilner Wood Products Co., Norway, Me.



**CALLAHAN AND STERNECKER:** The latest word on tank cars provides . . .

## Six Yards of Solid Facts

This 17-ft., 10-in. teletype from Frank Byrnes (Midwest editor) told Dick Callahan (assistant editor, Sales and Distribution) more about tank cars than he needed to know for his story last week (*CW*, July 14, p. 78). But Frank, having talked with the National Safety Council, General American Transportation Corp., and others in the Chicago area, was full of his subject.

What inspired the photograph above was certainly not the unexpected thrill of receiving a teletype—*CHEMICAL WEEK* gets dozens a day. But few are more than 5 or 6 ft. long, hence this was a relatively rare specimen.

The teletype room on the 31st floor of the McGraw-Hill Building in New York City links *CW* with the Chicago, Cleveland, Detroit, Houston, Washington, Atlanta, Los Angeles and San Francisco news bureaus. Six times a day, Eleanor Sternecker, editorial assistant, drops whichever of her many jobs she's doing for a seven-story round trip to deliver outgoing messages and pick up incoming ones.

Additionally, *CHEMICAL WEEK* has its own teletype machine on the 24th floor which is wired directly to the printer's office in Philadelphia.

As a result, it's possible for a regional editor or bureau man to teletype late news to New York on Monday afternoon, and see his item in print in the issue that is mailed the next day.

Teletype facilities are only one, of course, of the many communication tools that *CW*'s 27 full-time editors use every week in their efforts to get all the significant news—and get it first.

Howard C. E. Johnson,  
Editor.

### Right Data, Wrong Nation

TO THE EDITOR: I read with avid appreciation your splendid article (*June 30*) on the battle for world chemical trade. As a Canadian, I am extremely gratified to see our country doing so well in fierce international competition. Even though our chemical industry is surging forward, however, I am in-

clined to think that you credited us with more sales than we really deserve in the tables for essential oils, organic chemicals, and coal-tar dyes on page 44. Figures available here indicate that Canadian exports in those categories are substantially lower than those you reported. . . .

JACQUES MARCHAND  
Montreal, Que.

*Canadian Reader Marchand can indeed accuse us of being overgenerous. The figures shown for Canada in the classifications of essential oils, organic chemicals and coal tar dyes rightfully belong to Italy.—Ed.*

## SEE YOU THERE

**Virginia Polytechnic Institute**, 9th Oak Ridge Regional Symposium, Blacksburg, Va., July 30-31.

**National Soybean Processors Assn. and American Soybean Assn.**, annual meeting, University of Illinois, Urbana, Aug. 13-15.

**American Institute of Chemical Engineers**, meeting, William Penn Hotel, Pittsburgh, Sept. 9-12.

**International Congress on Catalysis**, meeting, Bellevue-Stratford Hotel, Philadelphia, Sept. 10-14.

**Drug, Chemical and Allied Trades Section** of the New York Board of Trade, annual meeting, Pocono Manor, Pa., Sept. 27-30.

**National Electronics Conference**, Hotel Sherman, Chicago, Oct. 1-3.

**American Mining Congress Metal Mining-Industrial Minerals**, convention and exposition, Shrine Exposition Hall, Los Angeles, Oct. 1-4.

**American Institute of Electrical Engineers**, fall general meeting, Morrison Hotel, Chicago, Oct. 1-5.

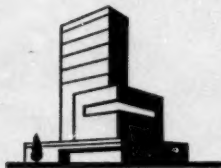
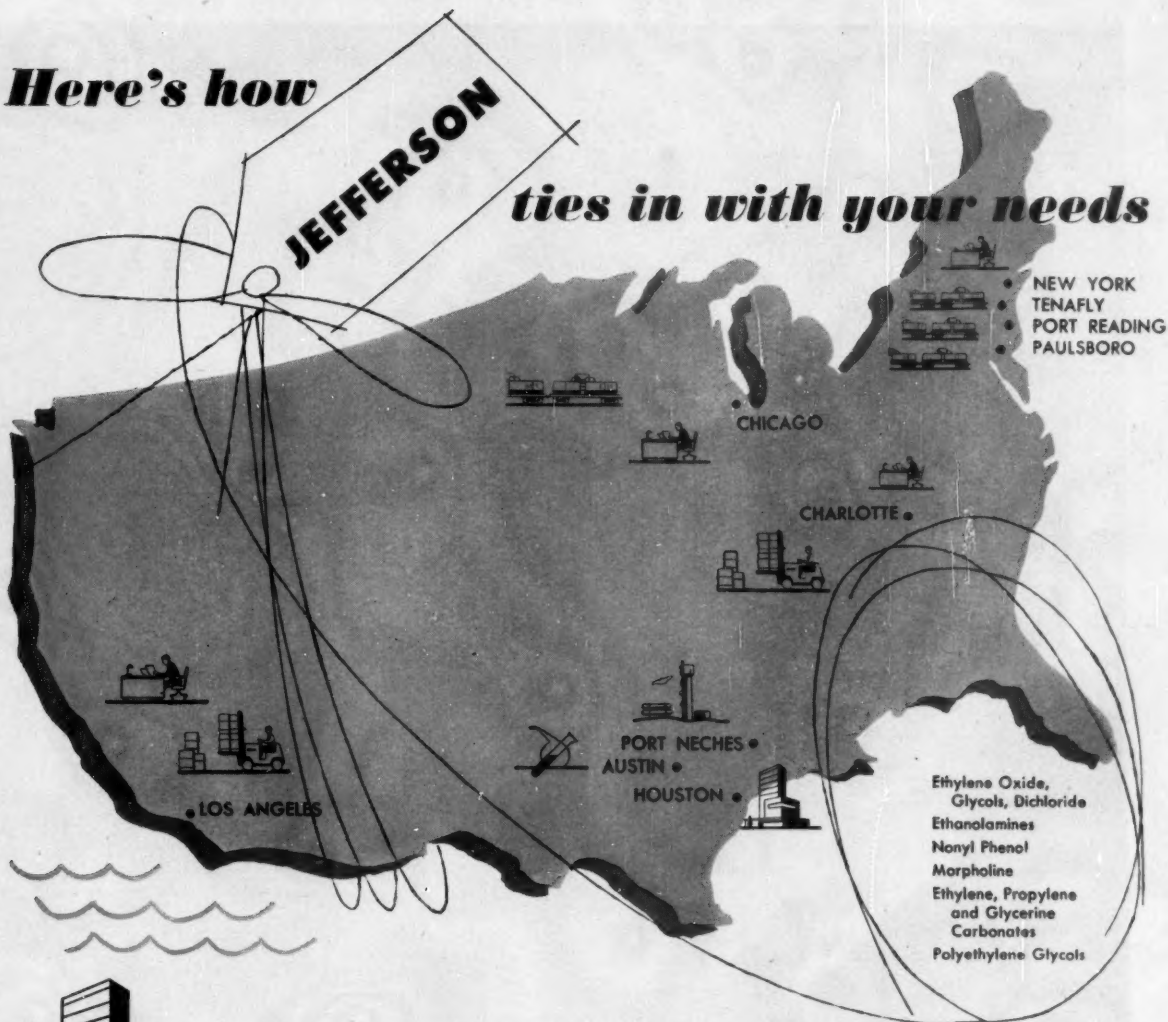
*CW* welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

**Here's how**

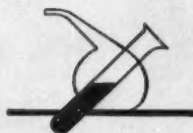
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**EXECUTIVE OFFICES**

A fully integrated company with complete facilities strategically located to serve petrochemical users.



**RESEARCH LABORATORY**

Extensive research facilities are maintained where experienced chemists are constantly seeking new and better petrochemicals.



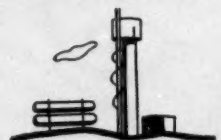
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Our sales and technical service staffs are ready to assist you in developing the most profitable applications of our products.



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Convenient distribution points make stocks readily available in any quantity to assure prompt and dependable service.



**PLANT**

Modern equipment and exacting tests control the manufacture of all chemicals . . . to help improve your products and processes.



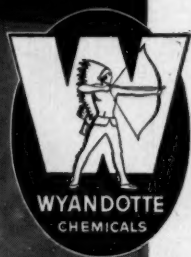
**BULK TERMINALS**

To handle your needs for bulk shipments of quality petrochemicals.

**Jefferson**  
CHEMICAL COMPANY, INC.  
Box 303, Houston 1, Texas







# How far should a chemical manufacturer go in helping distributors?

A manufacturer must go far enough to insure the sale of his own products.

This is only common sense.

The burden of establishing and advertising any product rests with the manufacturer. The burden of making the product available in the desired quantities, at the right time, to fit the needs or requirements of the buyer, rests with the distributor.

The manufacturer has to establish his brand name in the mind of the prospect or purchaser—create the desire to try it or buy it.

The distributor identifies himself as a local outlet for that brand—the one who serves the customer at the local level.

Simple, isn't it? Yet, it's funny how much confusion there is and how complicated the process can get.

One of the reasons distributing Wyandotte products works out to the advantage of both our distributors and ourselves, is that the Wyandotte distributor policy is clear-cut and written down.

Wyandotte distributors know that we assume the burden of the market establishment, advertising, research, and product development . . . that we do a consistently good job of it.

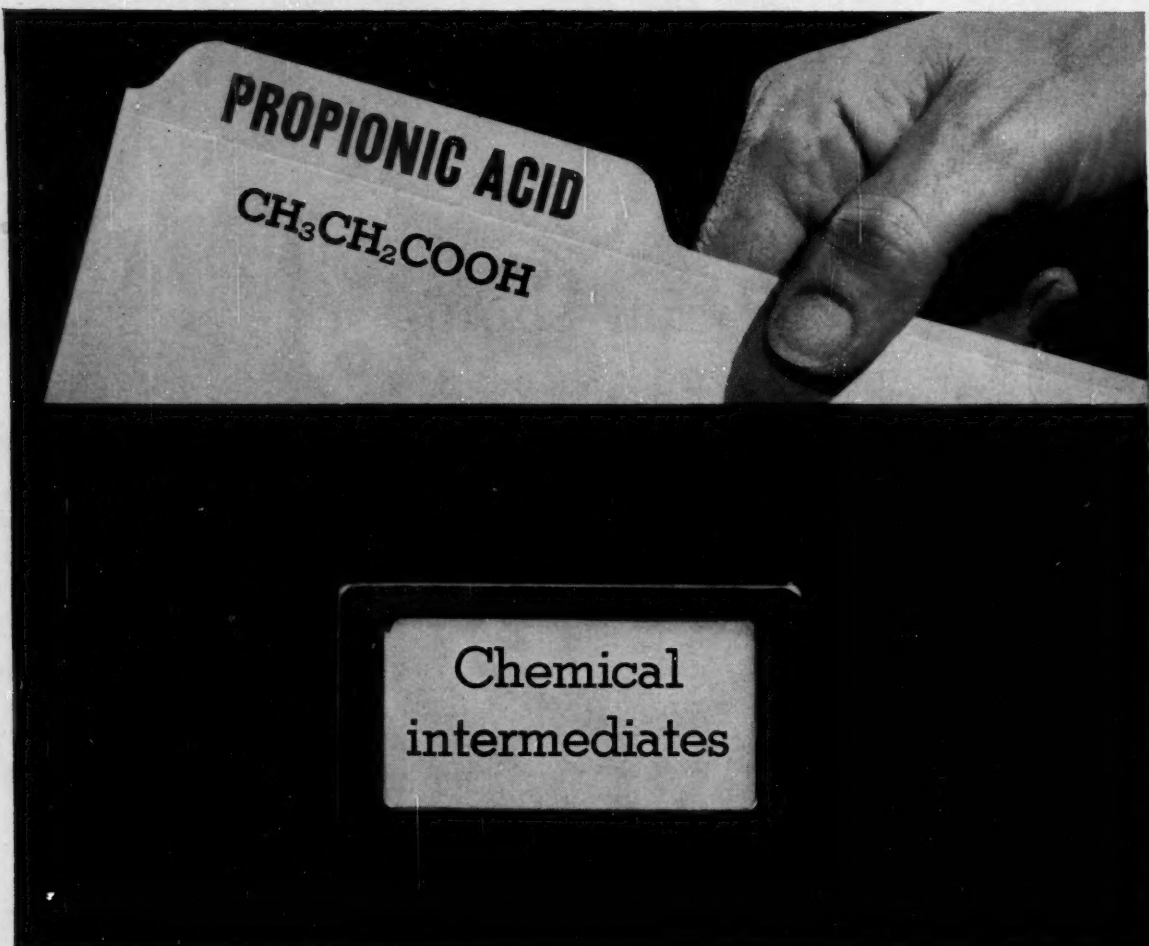
We know that Wyandotte distributors fit our products to the needs or desires of buyers at the local level (primarily in less-than-carload lots), and that we grow as they grow.

## ***Wyandotte* CHEMICALS**

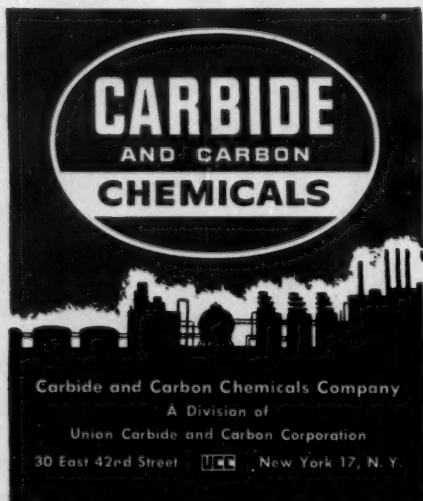
**MICHIGAN ALKALI DIVISION**

**WYANDOTTE CHEMICALS CORPORATION, WYANDOTTE, MICHIGAN**

*Offices in Principal Cities*



## PROPIONIC ACID — now available from CARBIDE in tank car quantities...



Propionic acid is an important intermediate for the synthesis of many new and useful products such as . . .

- Calcium and sodium propionate mold growth inhibitors for bakery products
- Cellulose propionate thermoplastic molding materials
- Intermediates for the manufacture of general-purpose herbicides
- Esters for the manufacture of flavors and floral aromas

Call or write your nearest CARBIDE representative now for further information and a sample of propionic acid. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

**Hooker Electrochemical, with its 1955 acquisitions of Durez Plastics and Niagara Alkali well under its belt, manufactures these main products:**

Chlorine, caustic soda, hydrogen, caustic potash, potassium carbonate, ammonia, metallic chlorides, chlorinated benzenes, trichloroethylene, hydrogen chloride, sodium sulfide and sulfhydryte, sodium benzoate, phenol, lauryl chloride, plasticizers, phenolic resins, polyester resins.

**If its acquisition of Oldbury Electrochemical goes through, it will add to its line:**

Phosphorus, phosphorus derivatives, chlorates, perchlorates and oxalic acid.

## Broader Business in Basics

**This week**, top officials of two Niagara Falls-headquartered companies, Hooker Electrochemical and Oldbury Electrochemical, are discussing the possibility of a merger.

If it goes through, it will mark the third acquisition by Hooker within two years—and a further broadening of an already extensive line of basic organic and inorganic chemicals. And it should mean close to a tripling of company sales in just three years. Hooker sales for the 12 months ending in Nov. '53, were \$38.7 million.

The proposed merger—which has been under serious consideration only during the past three weeks—would call for the issuing of 450,000 new shares of Hooker common stock in exchange for the 10,000 shares of Oldbury stock. Of this, 16% is owned by present Oldbury management, 84% by the British concern Albright & Wilson Ltd. On the basis of the price for Hooker stock at the time management first publicly revealed its discussions, Oldbury holders would receive just over \$22 million for their company.

**Why Oldbury?** When you ask Hooker Board Chairman R. Lindley Murray why he and his firm are negotiating this acquisition, he gives this answer:

"Oldbury will broaden our base as did each of our two previous

mergers. Its knowledge of inorganic and organic phosphorus compounds, chlorates, perchlorates and oxalic acid opens up a lot of new channels for us."

Murray lists these specific advantages: The acquisition should increase Hooker's earnings/share, as well as give it a modest immediate increase in sales. Too, in the Niagara Falls area, the original Hooker plant, its Niagara Alkali Division plant, and that of Oldbury are all adjacent to each other, thus making possible good operating savings as well as a substantial reduction in costs of some home-office administrative operations.

"In addition," reports Murray, "Oldbury's new plant at Columbus, Miss., is a very important part of the acquisition — since, if the merger goes through, it would be our first plant south of Kenton, Ohio. It would give us a plant in a rapidly expanding region."

**Oldbury's Angle:** Oldbury President Earl Whitford told *CW* that his firm has had various offers of merger during past years—but that the first one to be seriously considered is this one with Hooker.

In addition to the fact that the companies' plants are adjacent, they have had several advantageous supply relationships: Hooker has sold chlorine

and caustic to Oldbury, and has purchased phosphorus chlorides from it.

Since it owns 84% of the Oldbury stock, the final decision on the merger will have to be made by the board of Albright & Wilson. But it is unlikely that discussions would have gone this far if there had been any substantial misgivings from the British firm.

None of A&W's other interests—including the Electric Reduction Co. of Canada, Ltd., which produces phosphorus and sodium chlorate in Canada—are involved in the Hooker-Oldbury deal. The parent company itself makes phosphorus and derivatives. It owns Midland Silicones Ltd., Marchon Products Ltd. (which makes fatty alcohols, fatty acid esters, ethylene oxide condensation products, alkyl aryl sulfonates and sodium tripolyphosphate) and Solway Chemicals Ltd., which makes sulfuric acid from anhydrite.

On the Hooker side, Murray points out that about 99% of the stockholders okayed the mergers with Durez and Niagara. He expects a similar vote on the Oldbury merger.

### Push-Button Merger

**Another merger that will result in the broadening of a product line—but this time in consumer products—has been approved.**

Where Hooker (*see above*) wants to broaden its basic chemical line, B. T. Babbitt (New York), by acquiring two aerosol packaging companies, will add the marketing and production of aerosol products to its line of household cleaning materials.

Directors of Babbitt, and of Connecticut Chemical Research and its wholly owned subsidiary, Bostwick Laboratories (both of Bridgeport, Conn.) have approved the acquisition via a stock trade. CCR stockholders have also okayed the deal, so it is now subject only to the vote of Babbitt holders.

Bostwick currently markets 16 different aerosol products. Babbitt would continue to use the Bostwick distribution setup. Connecticut Chemical would be a separate operation, carrying on development work and production of private-label aerosol products.



SKETCHED IN WASHINGTON LAST WEEK BY STAFF ARTIST PETER MADDEN

**HOUSE OF REPRESENTATIVES LOBBY:** From legislators, an impressive list of chemical achievements.

## A Year to Remember

When you watch the 435 members of the House of Representatives swarm through the baroque speakers' lobby (above), cluster on the floor of the House chamber, or scurry down the curving underground passage that connects their offices with the Capitol itself, you sometimes wonder how any laws get passed. But year after year, members of the House and Senate handle many thousands of individual

pieces of legislation—some that appropriate billions of dollars, others that deal with a single person.

When the curtain comes down, a few weeks from now, on the stage that was the 84th Congress, chemical executives will be able to tote up an impressive list of legislative matters that will affect their industry's fortunes this year and in years to come. Yet, on an over-all basis, Congress didn't do very much this year—as some politicians will be sure to point out in the coming political campaigns. Some bills were ignored; others were given the "deep freeze" treatment. Still others, which missed passage by only a small margin, will be back for reconsideration next January. But enough emerged from the legislative mill to make this a Congress that the chemical industry will not soon forget.

Look at the session, first, as one in which Congress loosed its tightly clutched purse when it came to money for research. It appropriated 85% more money than last year.

its actions for special groups—it voted a soil bank for the farmers, a subsidy program for fluorspar miners and other mineral producers.

But on regulations, it laid only the groundwork. New laws to control use of barbiturates, chemical food additives, cosmetics and industrial alcohol were not passed, though committee work this year will likely bring next year's final action.



**BLATNIK:** Pollution was his baby.



**BOGGS:** His forte, barbiturate laws.

A second way to view it is to see

## Congress on Chemicals—Here's What Happened This Year

**Foreign trade**—The Administration's program had a tough time this year, with no bill becoming law as yet. The proposed Organization for Trade Cooperation won't be okayed, but the customs simplification bill may get approval—possibly with modified provisions.

**Alien property**—There's a chance that the Senate will pass a bill that would let all property seized at the start of World War II be returned to former owners. But it won't become law because of opposition from within the House Commerce Committee—which has even felt that the Administration's plan to return up to \$10,000 to individuals may be too much. It plans to hold hearings after Congress adjourns.

**Premier notification**—A pending bill requires big corporations and banks to give government antitrusters a 90-day advance notice before going ahead with any mergers or acquisitions. **Outlook:** The bill has already passed House, stands an excellent chance of becoming law.

**Limiting "good faith" price discrimination**—This bill (*see p. 126*), backed by small business groups, deals with the complex question of meeting competition in Robinson-Patman Act price discrimination cases and aims at up-setting a 1951 Supreme Court decision. **Outlook:** The House passed the bill by an almost unanimous vote last month, but Senate passage is doubtful. The feeling is that the bill will pass if Senate supporters can get it out of committee and up for a vote.

**Compressed gas safety**—No legislation pending. **Outlook:** The House Commerce Committee may study explosion, other safety hazards next year and recommend new labeling, packaging rules for gas cylinders.

**Barbiturate, amphetamine drugs**—A bill to tighten distribution regulations is pending in the House Commerce Committee. **Outlook:** No action will be taken this year, but approval is likely in '57.

**Industrial alcohol taxes**—Restrictions on users are eased in the bill now pending before the House. **Outlook:** Action will be deferred until next year, while House tax experts get further industry comment during the Congressional adjournment.

**Defense Dept. industrial plants**—Congress ended the requirement that the Pentagon get permission of House and Senate committees to shut down the Navy's paint-making plants, as well as other Defense Dept. industrial facilities.

**Disposal of other plants**—Currently up for sale are three other industrial-type plants: the alcohol butadiene facility at Louisville, Ky., the Akron, O., rubber research laboratories, and the Texas City, Tex., tin smelter. Current sales efforts are outlined on p. 31.

**Water pollution**—Congress enacted a new, permanent law with stronger federal enforcement powers, more federal funds to expand state pollution control programs and build city sewage treatment plants. **Outlook:** Congress will increase appropriations to the U.S. Public Health Service for these purposes, and for research grants.

**Air pollution**—No changes were made in the broad research, training and technical aid act voted last year, but funds for the program were upped \$1 million to \$2.74 million. USPHS plans to spend more on existing projects, put heavier emphasis on medical aspects of the problem, and finance college courses in air pollution.

**Potash leases**—A bill to increase the acreage on government lands that can be leased to individual potash developers was pigeonholed by the House Interior Committee. **Out-**

**look:** No action will come this year, but there's some chance next year if the bill is revised.

**Minerals purchase act**—A new "stop-gap" subsidy program for domestic producers of acid-grade fluorspar, tungsten, asbestos and columbium-tantalum is up for a House vote. The General Services Administration will spend \$91 million through Dec. 31, 1958, to buy 250,000 tons of acid-grade fluorspar at \$53/ton, plus sizable amounts for purchase of the three other minerals. **Outlook:** The bill will become law before Congress goes home.

**Coal research**—Bureau of Mines got \$497,000 for fiscal 1957 to spend on coal preparation and utilization research, and \$2,966,100 for coal-to-oil and coal-to-gas programs. Both sums are identical to the appropriations for the previous year and to the amount sought for '57.

**Industrial use of farm products**—Hearings before a subcommittee were held late in session on a bill by Sen. Homer Capehart (R., Ind.) and other farm-state senators which would pump \$100 million into government pilot plants to research ways to use surplus farm crops for industrial purposes.

**Saline water research**—The Interior Dept. was voted \$750,000 this year, a \$350,000 boost over last year, to develop processes to make fresh water from the sea and from brackish water.

**Rubber research**—National Science Foundation will spend about \$390,000 for grants on high polymer research, but cut back other synthetic rubber grants from last year's \$1 million to about \$300,000 in the current 1957 fiscal year.

**Medical research**—Congress voted \$184 million to the seven National Institutes of Health—A big jump from last year's \$98 million, and from the \$126 million sought by the Administration. The Veterans Administration got \$10 million—a \$4.3 million boost—for a variety of medical research projects.

**Food and drug**—Congress voted \$6,779,000 for the current fiscal year—the \$995,000 hike over last year sought by the Administration. The money will be used to hire more inspectors, beef up staffs for new-drug approvals and laboratories and replace obsolete equipment. It will restore FDA's personnel strength to the 1952 level. **Outlook:** This year's budget rise is just a start on a decade-long major expansion.

**Food additives**—The House Commerce Committee has slated no action following those hearings last March that brought into the open the controversy between the Food and Drug Administration and the chemical and food manufacturers on the question of appeal from FDA rulings. **Outlook:** No action this year, and no better than a 50-50 chance for enactment in '57.

**Cosmetic chemicals**—Hearings were not held on the bill to broaden FDA powers to regulate the use of chemicals in cosmetics. **Outlook:** The same as for the food additive bill.

**Food and drug re-export**—The House Commerce Committee held hearings late in the session on a bill to permit re-export of imported foods, drugs and cosmetics seized by FDA inspectors. **Outlook:** Doubtful this year, fair next year.

**Coal-tar food dyes**—President Eisenhower signed a bill postponing for three years the FDA ban on use by the citrus industry of FD&C, Red 32, a coal-tar dye. This will give Florida orange packers time to come up with a substitute dye that meets FDA safety requirements, and allow consumption of present stocks of Red 32.

## Shutout for Shutdowns

Two agreements signed last week mark the latest step in a new labor relations program for International Minerals & Chemical—adoption of multi-year labor contracts to improve employee relations.

Including those employees involved in last week's agreements, some three-fourths of IMC's mining and production workers are now covered by contracts that last from two to four years. As a result, IMC hopes that it may have a chance to steer away from long strikes such as the one last year that caused shutdown of the company's phosphate plants in Florida.

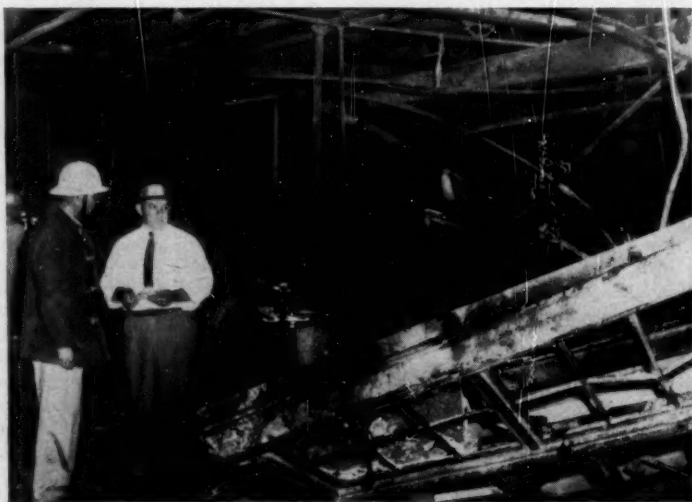
**Length and Strength:** IMC people freely admit that the unprecedented length of last year's walkout was a prime factor in helping them decide to negotiate long-term contracts. Profit-wise, aftereffects proved less fortunate. Net earnings for the 1956 fiscal year, which ended June 30, will

be about \$2/share—down from last year's \$2.55. IMC officials put most of the blame on the strike, and are seeking to prevent recurrences.

On the brighter side, sales and earnings since the strike are up substantially over the same period last year. And over-all sales for this fiscal year will be about the same as the previous year—\$96 million.

"Had there been no strike this year, sales would easily have topped \$100 million," said Louis Ware, president.

In any case, the two-, three- and four-year contracts—often considered a union aim—are relatively new for the fertilizer industry. Whether or not IMC is in the vanguard of a trend is difficult for observers to predict. But it seems likely that other chemical firms—at least those within the fertilizer and related industries—may be approached with similar multiple-year labor proposals.



### Last Rocks Vitro's Uranium Mill

Hard on the heels of the explosion at Sylvania's research laboratories (*CW Business Newsletter*, July 7) comes another nonatomic blast within a plant that processes fissionable nuclear materials. At Vitro's uranium ore processing plant in Salt Lake City, sparks

from a welder's torch touched off hydrogen fumes lingering above a 15,000-gal. sulfuric acid tank. The tank exploded, injuring three workmen and causing considerable damage. The Sylvania blast was caused by ignition of finely powdered thorium scrap.

## Ashtabula's Ill Wind

Ashtabula's traditional welcome to chemical plants is wearing thin. Reason: a change in the wind.

The northeast Ohio city, whose location, access to water transportation, power availability and situation over extensive salt deposits have brought it several major chemical plants, is upset. Its normal prevailing winds, which have customarily blown smoke and fumes from the plants out over Lake Erie, have recently been reversing themselves and have blown back over the city.

Unless the winds go back to normal, the companies—Union Carbide's Electromet and Linde Air Products divisions, General Tire, Hooker-Detrex, National Distillers and Archer-Daniels-Midland—may be faced with the substantial expense of installing new pollution abatement equipment. Too, the current furor may hamper the city's future chemical expansion.

It all started about a month ago. Until then, the direction of winds had been fairly steady. There had been no complaints.

But recently, there have been several sets of consecutive days in which fumes from some of the plants have passed over the city's residential areas. And residents are now complaining vigorously. Eyes are smarting, throats are raw. Plants and flowers are dying, thus giving parts of the city the nickname, "Withering Heights."

**City's Problem:** Though it has been on the receiving end of most of the complaints, the city of Ashtabula has had its hands pretty well tied. Many of the plants are located outside city limits.

As a result, city officials have formally requested help from the Ashtabula County commissioners in a joint effort to solve the problem. The city has also asked researchers from the state agricultural experiment station at Wooster to make tests to determine what chemicals in the air caused withering of plant foliage. It has asked state officials for technical aid on the general air pollution problem.

To date, the researchers from Wooster have been unable to pinpoint the injurious, air-borne chemical substances.

And it will be this week that Richard D. Schafer, the state's chief air pollution engineer, will make his

## Washington Angles »

» **Don't count on Senate agreement** with a House plan to keep the Rubber Disposal Commission in business through June to make a new try at selling the Louisville butadiene plant for general chemical manufacture. Senators are divided on the question, and now favor letting the commission expire this September. This would leave intact the authority for someone to negotiate a long-term operating lease with Publicker (whose present lease runs to 1958) or another butadiene maker, or to sell the plant after mid-1958.

» **But the Senate has allowed** sale of another government rubber facility—the Akron laboratories. Eight firms are reported interested, but under a Senate plan, they will have to outbid the U.S. Dept. of Agriculture to buy the labs. The General Services Administration will handle sale, expects bids to top the \$2-million original cost of the labs, come nearer the \$3.75-million current replacement cost.

*The House is expected to go along with this plan.*

» **The government's tin smelter** at Texas City, Tex., will soon go on the auction block. Treasury officials are expecting several bids by firms that plan to use the smelter to make tin alloys or tungsten with tin as a by-product only.

Officials insist that the smelter's reputation for high operating costs is unwarranted, stemming only from the fact that it's been required to produce pure stockpile-grade tin from low-grade concentrates. This involves costly processing to remove other metals—processing that an alloy producer could avoid.

» **Minor memos . . .** The Senate has confirmed the appointment of Judge Victor Hansen as the Justice Dept.'s top antitrust. . . . The New York Board of Trade has attacked the pending bills that would provide for a crash atomic power program as the "backdoor approach to nationalization." . . . A bill to require addition of 5% of alcohol made from U.S. grain stocks to all gasoline and petroleum products has been introduced in Congress by two farm-state legislators. . . . The Public Health Service has published in the July 10 Federal Register the tentative rules it will use in administering the new federal water pollution law. It gives interested parties until Aug. 9 to submit comments.

first inspection of the area.

**Who's to Blame?** With so many chemical firms located so close together, it is somewhat difficult to prove which one (or ones) may be at fault—if any. However, since the complaints come principally from residents of the city's northeast side, plants in that particular area will likely have to bear the brunt.

Up to now, at least, none of the companies at Ashtabula has officially investigated the situation or given assurances to city or county officials that it will take whatever steps are needed to alleviate any fumes.

But whatever the outcome—installation of new abatement equipment or termination of the freak winds—the possibility of a recurrence may steer other companies away from an Ashtabula plant site.

### EXPANSION

**Ammonia:** Southwest Agricultural Chemical Co. has awarded a \$5-million contract to Utah Construction Co. of Salt Lake City and San Francisco for construction of ammonia facilities at Chandler, Ariz. Capacity of the plant is listed at 100 tons/day.

**Phenolic Resins:** Hooker Electrochemical Co. will expand its Durez Plastics Division plant in North Tonawanda, N.Y.

**Petrochemicals:** Imperial Oil Co., Ltd., has disclosed plans for a \$25-million petrochemical plant to be built at its Sarnia, Ont., refinery. The plant will produce ethylene, propylene, *n*-butylenes, isobutylenes, butadiene, aromatic distillates and tars. Completion date: 1958.

**Naval Stores:** Continental Turpentine & Rosin Corp. will move its turpentine, rosin and pine oil operations from Laurel, Miss., to Shamrock, Fla., in 1957. The company has leased 250,000 acres of woodland in the area.

**Pulp and Paper:** Murphy Corp. will build a pulp mill, probably at Pine Bluff, Ark. A \$125,000 site has been purchased, but full cost of the plant has not been disclosed.

### COMPANIES

**North Carolina Pulp Co.** will proceed with acquisition of assets of the Eureka Lumber Co. (Washington,

N.C.) now that Eureka stockholders have approved the sale.

**Ashland Oil & Refining Co.** has bought the assets of R. J. Brown & Co., a Kentucky chemical and solvent producer. Purchase included interests in a number of Brown affiliates.

**Georgia-Pacific Corp.** has bought most of the assets of the Coos Bay Lumber Co. for integration into its forest products, kraft and paper operations. Cost: \$70 million.

**Lake Ontario Portland Cement Co., Ltd.,** is offering \$6,497,400 of 5½% debentures, 232,650 shares of 5% \$10 par convertible preferred and 699,150 shares of \$1 par common.

**Herbert Chemical Co.** (St. Bernard, O.) has purchased the caustic soda plant of Chemical Corp. of America.

**Western Agricultural Chemicals Co.** has incorporated in Delaware with authorized capital stock of \$2.5 million. Also in Delaware, the Gildersleeve Fertilizer Co. has incorporated with capital stock of \$150,000.

# PROVEN BY PERFORMANCE INVENTA-VULCAN UREA PROCESS

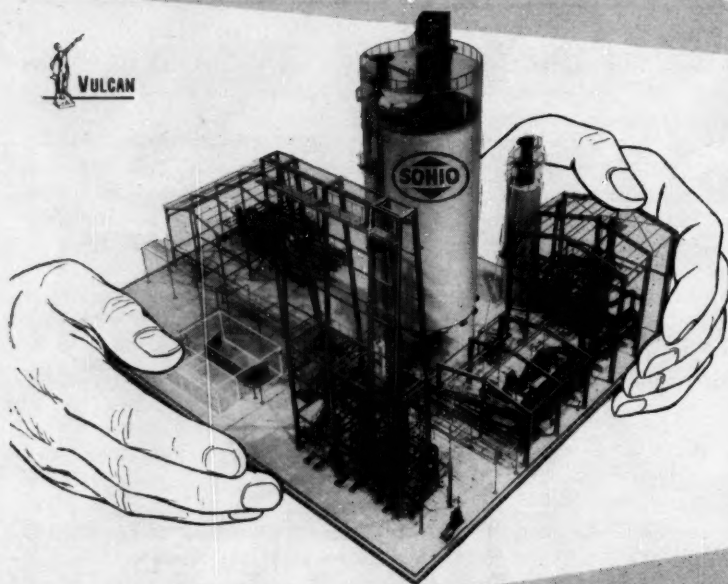
## Sohio Startup According to Plan— Smooth and Successful

The first Inventa-Vulcan urea plant in the United States is now on stream. This new plant was designed and built by Vulcan Engineering Division—licensors of the Inventa Process in the U.S. and Canada—for Sohio's \$17,000,000 petrochemicals installation at Lima, Ohio.

Within six hours after startup high quality urea was produced. Ease and reliability of operation were demonstrated. Startup produced first urea solutions and then prills for agricultural purposes exactly as planned.

Corrosion, traditionally present in urea synthesis, was conspicuously absent, as were clogged lines and contaminated product. No significant problems were encountered and the plant moved quickly and smoothly to full capacity.

The Inventa Process has been commercially successful in Switzerland for more than six years in tonnage production of urea of plastics and pharmaceutical grades. Additional details about the Inventa-Vulcan Urea Process may be had by writing to the Vulcan Engineering Division.



## VULCAN ENGINEERING DIVISION

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## FOREIGN

**Magnesium/Japan:** If they get approval from the Japanese government, four Japanese chemical firms will form a joint company to exploit a magnesium processing technique developed by Dow Chemical. Asahi Chemical, Sumitomo Chemical, Sumitomo Metal Industrial, and Shin Nippon Chemical plan to make 5,000 tons/year of magnesium products. Furukawa Magnesium Co., the only firm now producing magnesium ingots in Japan, also plans expansion.

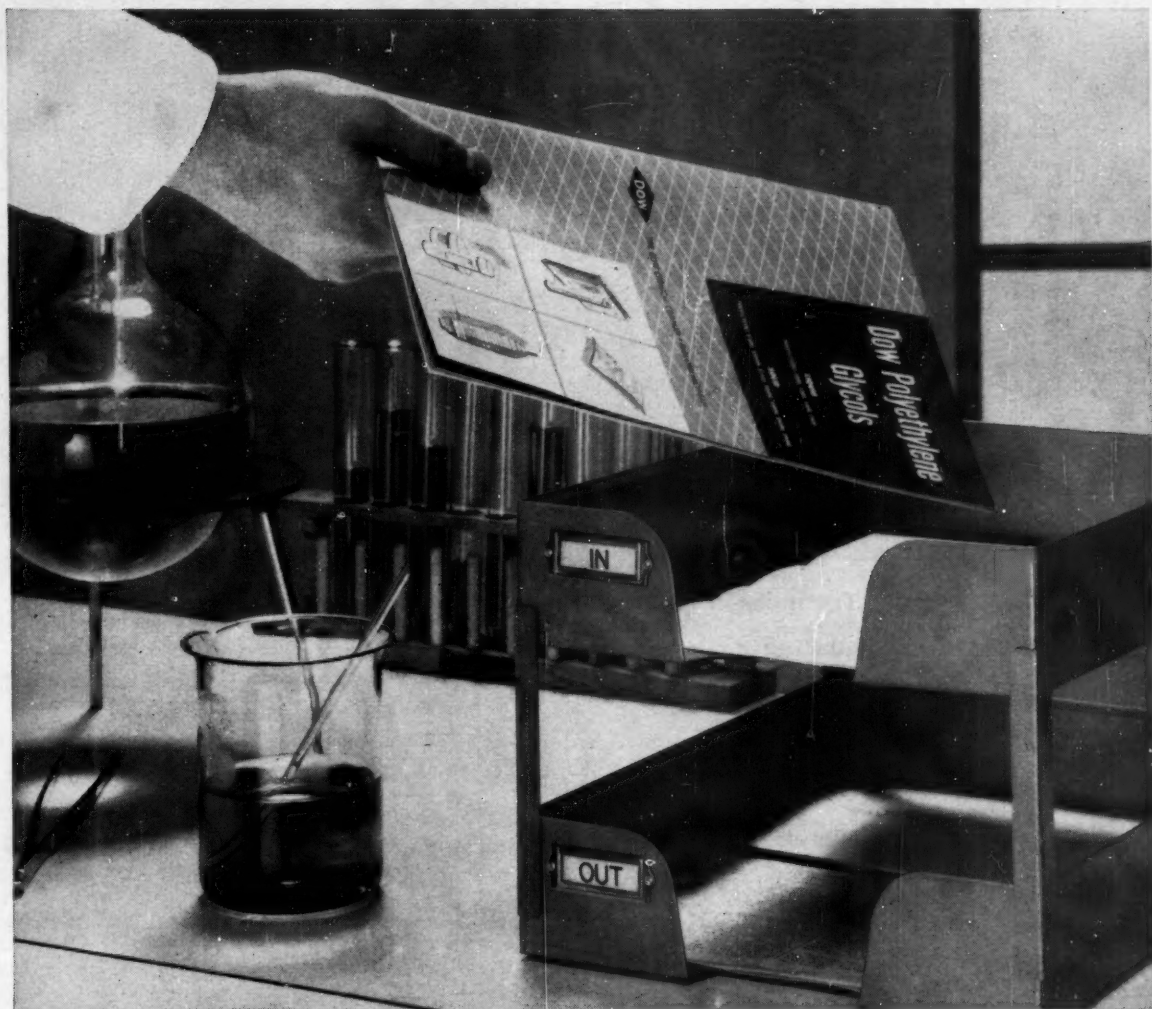
**Fertilizer/Korea:** South Korea may soon have its own domestic fertilizer industry. One \$21-million plant is already under construction near Chungju and another, still in the planning stages, may be built at a cost of about \$19 million.

A group of U.S. experts will soon make a two-month visit to Korea to make recommendations to the UN economic coordinator regarding Korean fertilizer requirements.

**Oil Additives/France:** Oronite Chemical and Société Progil have joined to form a new company which will make and sell lubricating oil additives. The new firm, Société Orogil, is planning a new plant scheduled to produce 5,000 tons/year of additives, plus smaller amounts of other basic chemicals—especially phenol derivatives.

**Calcium Carbide/India:** The Indian government has just announced that the present protective tariff on calcium carbide will remain in force. The country's tariff commission had recommended a protective duty of 45% ad valorem but the final ruling extends the existing 50% ad valorem duty through Dec. 31, '58.

**Chemicals/Mexico:** Pennsalt de Mexico, subsidiary of Pennsalt International, has just formed a new company, Quimica Pennsalt, to manufacture six chemicals. Capitalized at \$3 million, the new company will build a plant near Mexico City to produce caustic soda, chlorine, hydrochloric acid, monochlorobenzene, *p*-dichlorobenzene and 2,000 tons/year of DDT. Construction will begin in September, with completion scheduled for the end of '57.



## Facts on 11 different POLYETHYLENE GLYCOLS *in one handy source*

What liquids are miscible with liquid polyethylene glycols? Which are soluble? And in what proportions? What effect do polyethylene glycols have on natural rubber? What is the viscosity of aqueous polyethylene glycol solutions? You'll have the answers to such questions at your fingertips, when you receive your bulletin on Dow Polyethylene Glycols.

This one source covers eleven polyethylene glycols . . . gives properties of the solid and liquid forms, specifications,

thermal stability, uses, and other data that you can use to good advantage. For your free copy, write us today on your company letterhead.

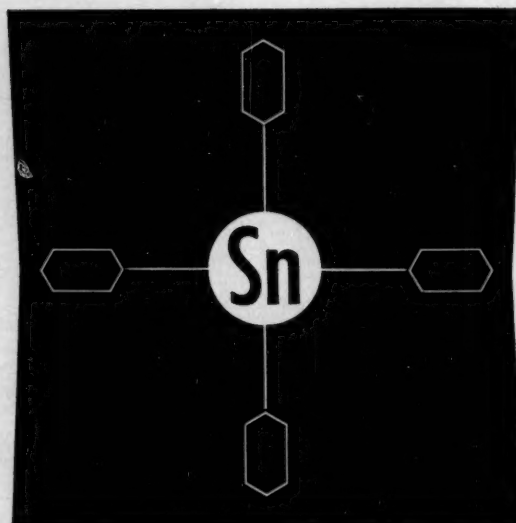
Dow offers you information on its polypropylene glycol series as well as the polyethylene glycol series. Both are widely used by industry and available in sample form for testing. Inquiries about polyglycols with tailor-made physical properties are also invited. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. OC 846B.

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# M & T TETRAPHENYLTIN

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TETRAPHENYLTIN is one of the new Metal & Thermit tin chemicals that offer relatively untapped potentials in new or existing fields. At present, it is an outstanding scavenger used in patented chlorinated liquids for insulating and cooling transformers; it also holds promise as a mothproofing agent. But TETRAPHENYLTIN's interesting properties are still being probed by research chemists as an answer to their production problems.

We invite you to try M & T TETRAPHENYLTIN as a better chemical for the formulation or production of *your* product. We will be glad to cooperate in any research directed toward its further use.

## PROPERTIES

Appearance.....	Crystalline, free-flowing powder
Color.....	White to light tan
Molecular weight.....	427.1
Melting Point.....	228°C ± 1.5°
Boiling Point.....	Above 420°C
Flash Point.....	231°C (Cleveland open cup)
Fire Point.....	269°C
Density (25°C).....	1.48 grams/cc.
Bulk Density.....	32 lbs./cu. ft.
Vapor Pressure @ 25°C.....	1x10 <sup>-5</sup> mm.
Total Chloride.....	50 ppm
Thermal Stability.....	Excellent

## Solubility

Tetraphenyltin is insoluble in water, and only slightly soluble in common organic solvents at room temperature. At elevated temperatures, increased solubility is obtained with aromatic solvents.

• M & T TETRAPHENYLTIN is available in full production quantities. A laboratory sample may be obtained immediately by writing us on your company letterhead.

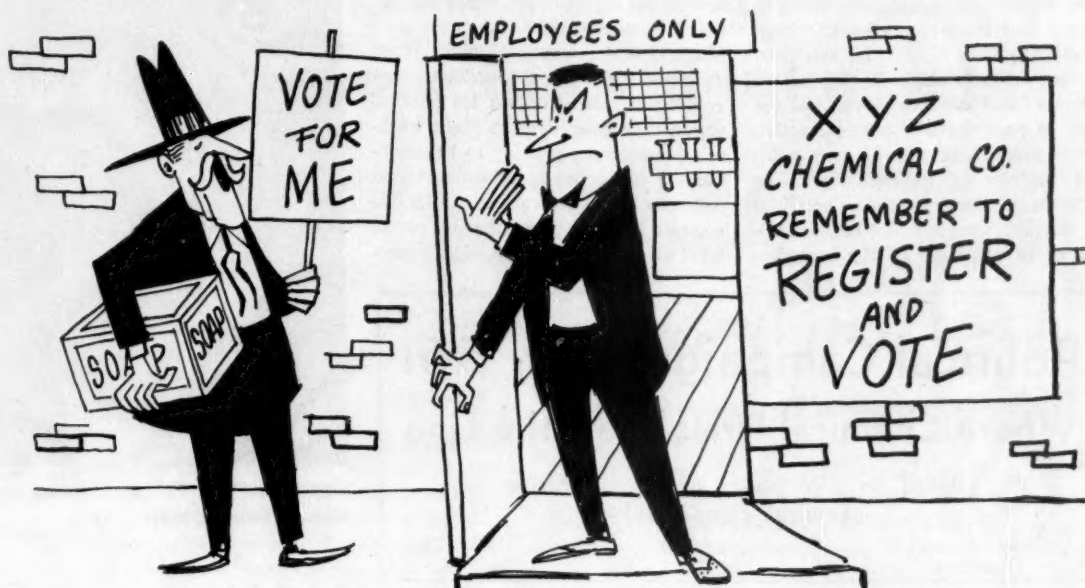
TIN & TIN CHEMICALS  
CERAMIC MATERIALS  
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# ADMINISTRATION



## 'Private Property—No Politicking'

Chemical plants and offices, generally speaking, will be "off limits" to the candidates and other politicians who — from now until November — will be stalking the voters from Cape Cod to California.

The overwhelming majority of 31 companies polled by *CW* last month say they want their employees to take an interest in the elections, as in other civic functions; but they don't want company property to be used for campaign rallies.

"Politicking" will become particularly rampant following next month's big nominating conventions, so now's the time to state or restate company policy on what's o.k. and what's taboo in electioneering at company facilities.

Plants and offices are especially attractive to campaigners, because there they can work on an almost captive audience—including some persons who won't sit through speech-making sessions on their own time. And if a company opens its gates to one candidate, it can hardly say no to others.

**Individual Action Asked:** While companies—as such—are striving to be neutral and even stand-offish in the coming campaign, many manage-

ment men—as individuals—are becoming more active in local, state and national politics. This is seen most conspicuously in President Eisenhower's "businessmen's administration." Several weeks ago, one large industrial firm with an important chemical division—General Electric—went so far as to urge businessmen in general and GE executives in particular to go in for direct political action, ranging from speeches down to "leg work" at the precinct level. Businessmen, says GE, have an obligation to convince politicians that it's not good politics to be "antibusiness."

Most large chemical companies, through employee magazines and bulletin boards, are reminding their employees to register and vote. And some firms are encouraging their employees to take part in the current campaign. But most of the companies surveyed don't permit any of their own employees to do any campaigning on company property. And there was unanimous opposition to letting anyone solicit campaign contributions at the plant or office.

Quite a sprinkling of chemical company employees are going to be listed on the ballots this November. Em-

ployees who are candidates for state offices were reported by 4 of the companies surveyed, and 16 concerns said some of their employees will be running for local offices.

**Rule-making Varies:** In some companies, policy on campaign practices is set by branch and plant managers; other chemical concerns have company-wide rules covering such situations. But even where the field managers have authority to make their own rules, they are usually aware of the trend of thinking at the front offices. Typical of comments from chemical executives:

"My opinion is that local management would not sanction political speeches on company property at any time."

One company-wide policy covering on-duty activities of employees:

"Company policy does not prohibit the distribution of campaign buttons but does prohibit solicitation of funds for all purposes except the Community Chest."

**No Visits Yet:** Although some of the intense campaigning in the Democratic Presidential preference primary elections in several states during recent months included appearances and

## ADMINISTRATION

speeches in large plants of other industries, the chemical companies surveyed all say that their plants haven't been touched by such visits so far this year.

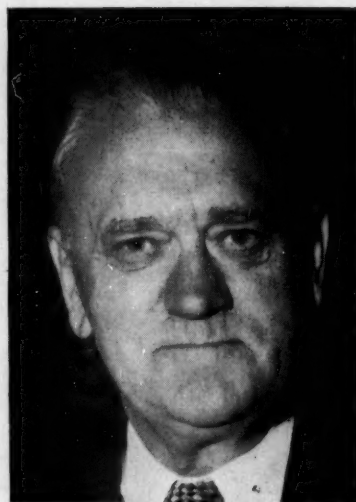
One large chemical corporation believes "that each employee has the right to participate in political activities in accordance with his own political preferences to the degree he chooses, as long as those activities do not interfere with his responsibilities as an employee of the organiza-

tion." This philosophy is probably shared by many liberal employers as being in accord with the needs and ideals of a democratic republic. However, it does give nonsupervisory employees more freedom for political action than executives. A plant worker's campaigning is likely to be attributed to labor union influence, but a company vice-president can hardly disassociate himself from the corporate label while making a campaign speech.

## Political Campaigning in '56: Where Chemical Firms Draw the Line

(Based on CW survey of representative chemical companies)

Question	Yes	No
Are candidates or party officials allowed to visit your company's plants and offices—		
• during working hours?	12%	88%
• during lunch hour, or before or after work time?	3%	97%
Are such campaigners allowed to make speeches, shake hands, and pass out campaign literature—		
• in work areas?	8%	92%
• in cafeteria or other nonwork areas?	0%	100%
• in plant parking lot or other outdoor areas?	5%	95%
Does your company actively urge and remind employees to register and vote?	80%	20%
Does your company encourage employees to take part in campaigning?	14%	86%
In this year's election, are any of your employees candidates for state or local elections?	68%	32%
If an employee is a member of a local campaign committee, would he be allowed to—		
• pass out campaign buttons and pamphlets at the plant or office?	15%	85%
• solicit campaign contributions at the plant or office?	0%	100%



FTC'S GWYNNE: For antitrust actions, a bumper year.

## LEGAL

**A New Record:** With a fervor indicative of election-year thinking, the Federal Trade Commission has busied itself setting a new record for antitrust complaints passed out during a single fiscal year. From July 1, '55, through June 30, '56, the commission handed out 42 complaints—compared with 36 for the previous year, and an average of 28 per year between 1944 and '53. The commission also issued 40 orders in antitrust cases pending from previous years—compared with 30 in fiscal '55, and a 21.4/year average for 1944-53.

Included in the commission's 42 antitrust complaints were five charging violation of the Clayton Act's anti-merger provisions.

**Slave-Labor Suit:** In West Germany, the liquidation management of the I. G. Farben chemical cartel is offering to pay the equivalent of about \$7 million in settlement of claims by former slave laborers. So far, the Jewish Material Claims Conference—representing many of the claimants—has not indicated whether it will accept this offer. Still suspended while these negotiations are going on is the lawsuit brought by one of the claimants. Farben denies it was responsible, claims the slave labor system was decreed and carried out by the Hitler regime, but says it wants to do something for the persons who suffered.

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D-40, D-60 in dry form, Wetting Agent "S" in paste form and NI-W in liquid form have superior wetting ability. Compare these products with those you are now using—samples are available. Or, tell us your particular needs for "wetting" and we can provide suggested formulations.

## want *emulsifying* or dispersing action?

D-40 and D-60 have the ability to emulsify and suspend animal, vegetable, and mineral fats, oils and greases. Oronite's water soluble Dispersant NI-W is completely compatible with soaps, anionic detergents and cationic germicides. Its companion product Dispersant NI-O is an outstanding emulsifier for water-in-oil emulsions.

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FORMER RUSSIAN LYSENKO: No medals, but freedom for research.

### Pacing Soviet Technology . . .

## 'Party Hacks' or Scientists?

Is Russia winning the struggle with U.S. industry for technological supremacy? How numerous and how well trained are Russian technical personnel? These are tough questions, and even the most quoted answers are no more than educated opinions.

To get one first-hand view of the situation, *CW* talked with Pavlo D. Lysenko—former Soviet industrial chemist and holder of the Order of the Red Banner—who tells of malcontent among Russian scientists and special

treatment for party members in the Soviet chemical industry he knew during World War II. Lysenko—brother of noted Russian geneticist Trofim D. Lysenko—says 90% of the workers at the Russian Coke Institute during the war "were ungifted, but were closely united, and were great troublemakers and politicians.

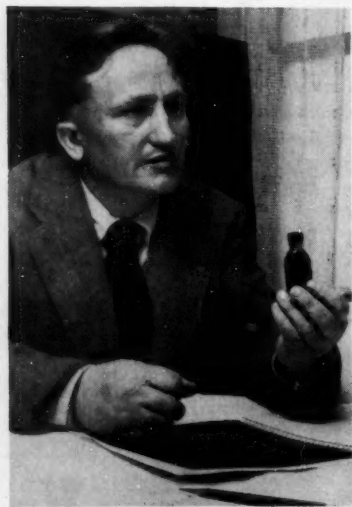
"There were only a few real scientists who made significant contributions," Lysenko told *CW*, "but there were hundreds of giftless ones who were

spending millions, interfering with the work of the true scientists, and even taking jobs away from the more qualified, but non-party-member, chemists." Lysenko's refusal to join in party politics resulted in repeated demotions and transfers toward the front, where he was subsequently captured by the Germans.

**U.S. Citizens Now:** Now that Lysenko and his wife, Natalie, are in the U.S.—and both U.S. citizens—there are no more medals; but neither are there such fettering devices as state-supervised research, with preferential treatment for party members.

Lysenko—a mild-mannered and somewhat introverted man—has changed his field from coal technology, about which he has published over 40 articles, to food chemistry. With vegetables from his own garden and utensils from his wife's kitchen, Lysenko has been experimenting with what he calls revolutionary food products. His projects include making honey from watermelons, milk from vegetables, and a universal food product containing all man's food needs. Displaying Old-World charm and politeness, he talks enthusiastically about a farm "factory" that would utilize farm products to produce all the farmer's needs, including even motor oil and rubber for tires.

Ineligible for a job in his field prior to his recent naturalization, Lysenko now hopes he'll be able to continue his experiments in an industrial laboratory. Private experimentation is expensive,



HONEY FROM WATERMELONS: New foods in the New World, and an opportunity to pursue a dream.

# NEWS about Nitroparaffins in use!

Just released for industry use: a new 48-page book presenting the latest information on nitroparaffins and derivatives as revealed in a series of recent symposiums.

At these symposiums, held in New York, Chicago and San Francisco, representatives of companies working directly with the NP's and their derivatives were invited to present their findings. Research, technical and development personnel representing a broad variety of processing industries participated.

This valuable book contains the full texts of the papers discussed. It may be very helpful to you in new product development and in improving your present products and processes. Write for your copy today.











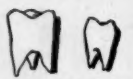

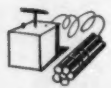






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## ADMINISTRATION

and the Lysenkos—both graduate chemists—have been subsisting for their seven years in the U.S. on income from menial chores plus outside aid from agencies and friends.

**Good Academic Facilities:** Lysenko speaks with praise of the university in Kharkov—where he and his wife received their chemistry training and where they met. "The professors were cultured and well qualified," he says. "The laboratories were filled, and compulsory classes met for six to eight hours each day for six days a week." The students, according to Lysenko, were divided into three groups according to ability to learn. The strongest group had to help the weakest. About 75% of the students were on scholarships.

In addition to classroom training, Russian students were required to go into factories for four to five months' training. Satisfactory completion of academic and "on-the-job" training qualified the student for "papers" certifying his qualifications.

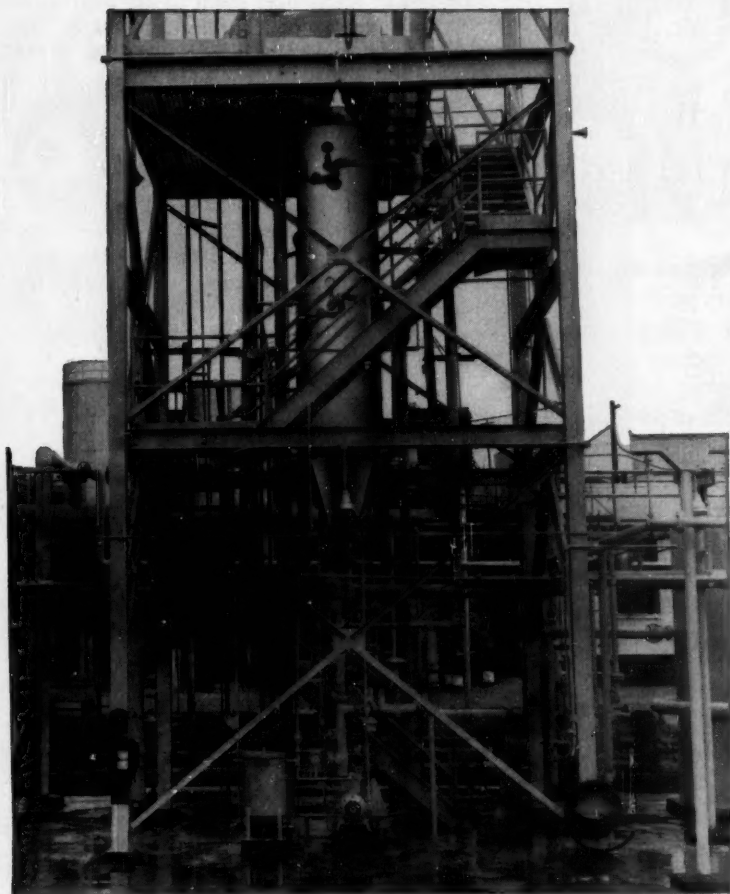
**Elements of Uncertainty:** While political and psychological factors have indicated—and from all reports, continue to indicate—elements of uncertainty and conflict in Russia's bid for technological supremacy over the West, the systems of training and education appear to be well conceived.

Realizing that it has lagged behind the West in scientific manpower development, the Soviet Union has accelerated its training programs. Between 1951 and 1953, Russia annually graduated an average of 38,500 scientific and engineering students. Semi-professional schools alone produced more than 60,000 graduates/year on the technician level.

But the Soviets are still behind the U.S. in scientific manpower. There are currently 400,000 engineers and 150,000 scientists in Russia, compared with 500,000 engineers and 200,000 scientists in the U.S.

As additional facts become available, new evaluations of Russian technological training must be made. For the present, this fact remains: even in the face of these charges by Lysenko—and others who have witnessed the Communist system of party favoritism and restrictions on individual freedom—the Soviet program of personnel training and the whole of Russian technology present a serious challenge to U.S. industry.

# SHELL OIL COMPANY solves scaling problem with Turba-Film Evaporator



Turba-Film Evaporator used by Shell Oil Company, Martinez, California, dries a special type of oil, eliminates scale formation on heat transfer surfaces and provides continuous operation. The Turba-Film Evaporator shown is a No. 5 model built to Shell's specifications with stainless steel rotor, vapor section and outlet cone. It processes 30 barrels of oil per hour.

## *The problem:*

to reduce moisture content of a special type of oil from an initial content of 3 to 6% to a maximum of 0.2%. Standard stills achieved the specified moisture content but deposited inorganic salts as scale on the heat transfer surfaces in such quantities as to demand frequent shutdown for cleaning.

## *The solution:*

the Turba-Film® Evaporator, now in use for over a year, reduces 30 barrels of oil per hour to the specified moisture content — usually even lower — and precipitates the scale-forming substances in the dried oil, from which they are easily filtered. Shell now enjoys continuous operation in this process without shutdown for cleaning.

The patented Turba-Film Evaporator and the Rodney Hunt-Luwa Spray Dryer have a broad range of moisture-removal application in the Chemical Process Industries. Send for informative literature on Rodney Hunt process equipment.

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Process Equipment Division  
29 Vale Street, Orange, Massachusetts, U. S. A.



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 If you don't need it,  
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It is an easy matter to determine whether or not you need tantalum in your process. If tantalum eliminates shut-down, product contamination, side reactions, fume damage and other waste due to corrosion, *you need it!*

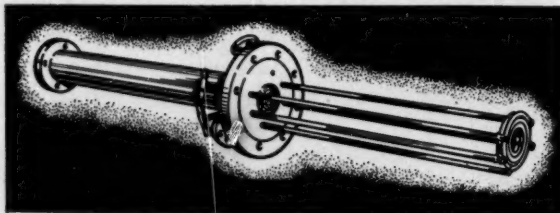
If tantalum increases equipment life four-fold, or more, even if it costs only twice as much...you need it!

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 Chemical Equipment Division  
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G562A

## ADMINISTRATION

### LABOR

**Midsummer Signings:** While steel workers were striking, chemical workers and their unions were signing new contracts with their employers this month. One concern was able to report that new long-term labor agreements have put it in its "most favorable position in its history for uninterrupted production" (see p. 30); and other companies also were carrying on the trend toward multiyear contracts. Wage increases range up to 18¢/hour.

- At Binghamton, N.Y., members of International Chemical Workers Union (AFL-CIO) have ratified a two-year contract with General Aniline & Film's Ansco Division. Over the two years, wage rates are to rise by 7%—which, it's estimated, will amount to an average of 17½¢/hour.

- American Cyanamid and the Oil, Chemical & Atomic Workers (AFL-CIO) have agreed on increases of 15-22¢/hour—about 18¢ on the average—for employees at the Fortier plant near New Orleans. This came after just two bargaining sessions under a wage reopener clause.

- Allied Chemical & Dye's National Aniline Division is granting a 6% wage increase now, with an additional 3% rise set for next year, to about 1,500 production workers represented by District 50, United Mine Workers, at Buffalo, N.Y.

- Instead of the 4¢ increase that was scheduled to go into effect this month, Monsanto Chemical's Lion Oil Co. Division is granting an 11¢ hourly pay boost to 435 employees represented by OCAW at its ammonia plant at El Dorado, Ark. The amendment to the existing contract also calls for a further increase of 6¢/hour effective next July 1.

- A two-year contract and a 15¢/hour general wage increase went to employees of Alox Corp.'s organic chemicals plant at Niagara Falls, N.Y. A District 50 spokesman says the new "fringes"—including added insurance benefits and higher pay for holidays and weekends worked—will be worth 12½¢/hour.

- Longer contracts also are appearing in the raw materials producing fields. American Smelting & Refining has just concluded a three-year agreement with Tacoma, Wash., employees represented by International Union of

# NH<sub>3</sub>

# 3

**more**

**ammonia**

**plants**

**by**

**Foster Wheeler**

Three major petrochemical manufacturing companies have recently authorized Foster Wheeler to proceed with the design and construction of three Ammonia Synthesis Plants having a combined NH<sub>3</sub> production capacity of 585 tons/day. One of these plants will have a design capacity of 305 tons/day, the largest ever built by Foster Wheeler.

Hydrogen, for all three plants, will be separated from hydrogen-rich tail gas streams from nearby processing units.

These contracts reflect industry's approval of the Casale Process for Ammonia Synthesis and also Foster Wheeler's design, engineering and construction "know how". When these plants are completed, Foster Wheeler will have built —

**9**

NH<sub>3</sub> Synthesis plants with a combined capacity of

**1585 T/D**

**FOSTER  WHEELER**

NEW YORK • LONDON • PARIS • ST. CATHARINES, ONT.



## W & T CHLORINATION ...

*complete algae control for 25% of  
the cost of best previous treatment*

The Geo. Wiedemann Brewing Co., of Newport, Kentucky had an algae problem on the water-side surfaces of their pasteurizers that increased operational costs, cut pasteurization efficiency, caused corrosive pitting of the units, and created very objectionable odors.

Five years ago, after trying other treatments, a Wallace & Tiernan chlorinator and proportioning solution panel were installed. The chlorination treatment has been completely successful in eliminating the problem at about one-fourth the cost of the best treatment tried previously.

A Wallace & Tiernan chlorination system can correct problems caused by algae growths in your process. Write for our free bulletin 2136-C that describes the Geo. Wiedemann Brewing Co. case history, and tell us of your specific problem.



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M-31

## ADMINISTRATION



**OCAW'S BUCHANAN:** For chemical workers, more multi-plant bargaining.

Mine, Mill & Smelter Workers (Ind.). Pay rates are to rise 10¢/hour in 1956, 7¢/hour in '57 and in '58.

**Hectic Schedule:** OCAW's first convention since it was formed by merger 17 months ago will be held next month in St. Louis. But that's only one part of the busy schedule union officials have set. Various preconvention caucuses and committee meetings dot the calendar from now until the call to order, when John Livingston, director of organization for AFL-CIO, is expected to tell OCAW to bear down on organizing chemical plants if it wants financial aid.

Too, the union and several officials are defendants in a civil suit filed by Missouri's state attorney general in connection with a strike by OCAW members against Laclede Gas Co. at St. Louis. Governor Phil Donnelly says the union has violated a state law prohibiting utility strikes; OCAW Vice-president Joe Appelbaum contends the law is invalid.

Finally, OCAW will keep right on forming company councils and sub-industry councils to coordinate bargaining at various plants; and these councils are meeting every so often to map strategy for upcoming contract renewals. Latest group organized: a company-wide council representing OCAW locals at seven Koppers Co. plants. Coordinator of this council will be Roberts Buchanan, OCAW's district director at Cleveland.

# You asked for it!



## 2,4,6-Collidine

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HERE ARE SOME OF THE  
PHYSICAL CONSTANTS  
OF PURE 2, 4, 6-COLLIDINE:

- Molecular Weight . . . . 121.18
- Freezing Point . . . . -44.5°C.
- Boiling Point at 760 mm  
                                    170.4°C.
- Density at 20°/20°C. . 0.913g/cc
- Refractive Index at 20°C.nD  
                                    1.4981
- Solubility in 100 g. water at  
20°C . . . . . 3.6 g.
- Solubility of water in 100g. at  
20°C . . . . . 85 g.

Industry has asked for 2, 4, 6-Collidine. So, the Reilly Semi-Works is making the product in commercial quantities! The purity is 97.5% minimum . . . the price has been reduced.

2, 4, 6-Collidine is used as a dehydro-halogenating agent. It is also useful in the chromatographic analysis of amino acids. Don't these uses suggest an application in one of your processes?



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"A plasticizer for every purpose"

# when your plastics STEP OUTSIDE...



## try **KP-90** for all-weather protection PLASTICIZER

All the weather protection you need—in one plasticizer; low temperature flexibility, ultra-violet light stability and heat stability. If your plastic product has any application outdoors these properties are vitally important—so why not consider them all in one plasticizer.

**THE HEAT AND LIGHT STABILITY** imparted by KP-90 can save you money if you are currently using expensive stabilizers for end products that require a high degree of clarity. Without sacrificing clarity or stability, the cost of your product is substantially reduced by substituting KP-90 for a portion of your present expensive stabilizer. None of the desirable properties of the plastic will be sacrificed when KP-90 is used.

**A LOW TEMPERATURE FLEXIBILITY** of  $-49^{\circ}\text{C}$ . (Clash and Berg) makes KP-90 a desirable substitute for other more expensive low temperature plasticizers in outdoor applications. In any formulation requiring low temperature flexibility KP-90 can be substituted for the more expensive adipates, sebacates, azelates, etc. at a savings and with no loss of low temperature flexibility.

Truly the all-weather plasticizer KP-90 should be evaluated if your plastic "steps outside." It is an epoxy type primary plasticizer and is compatible with most resins.

Technical data and samples of KP-90 are available  
and will be sent immediately upon request.



**OHIO-APEX DIVISION**  
FOOD MACHINERY AND CHEMICAL CORPORATION  
NITRO, WEST VIRGINIA  
Department 36

☐ Send technical data. ☐ Send KP-90 sample.

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CITY \_\_\_\_\_ STATE \_\_\_\_\_



## ADMINISTRATION

### KEY CHANGES

**Paul D. Littlefield**, to treasurer, Freeport Sulphur (New York).

**Whittaker Lonsdale**, to vice-president, Jefferson Island Salt Co. (Louisville, Ky.).

**Lester B. Swan**, to director, Dowell, Inc. (Tulsa, Okla.).

**John L. Cassullo**, to president, Fritzsche Brothers (New York).

**L. C. Ball**, to chairman; **Albert E. Bollinger**, to president; Ault & Wiborg Carbon & Ribbon Div., Interchemical Corp. (New York).

**J. W. Keener** and **Arthur Kelly**, to executive vice-presidents, B. F. Goodrich (Akron).

**Philip B. Herman**, to vice-president, American Petrochemical Corp. (Minneapolis).

**William C. Watson**, to treasurer, Chesebrough-Pond's, Inc. (New York).

**C. W. Wallhausen** and **W. H. Byler**, to directors, United States Radium Corp. (Morristown, N.J.).

**Fred L. Shanklin**, to president, Union Carbide Ore Co., division of Union Carbide & Carbon (N.Y.).

**Gösta Englund** and **Frank J. Hickey** to vice-presidents, Prior Chemical Corp. (New York).

**Edward L. Shea**, to board chairman; **B. Bynum Turner**, to president; Ethyl Corp. (New York).

**Adair Baker**, to vice-president of manufacturing and research, Vestal Laboratories (St. Louis).

**Bert R. Prall**, to director, Universal Oil Products (Des Plaines, Ill.).

**Leon Breton**, to manager of market research and development, American Mineral Spirits (Chicago).

### DIED

**Charles E. Hayward**, 82, retired vice-president, Sharp & Dohme Division of Merck & Co. (Philadelphia), at Chester, Pa.

**Paul Carlisle**, 79, retired director of research, Du Pont (Philadelphia), and past president of the Chemical Market Research Assn., at San Juan, Puerto Rico.

# Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt



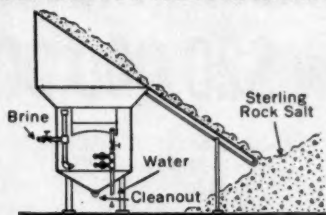
## Combining Storage and Feeding Makes Salt Handling Easier

To save both time and manpower in salt handling—many plants have installed salt-storage units which feed directly into a salt dissolver. These units are particularly useful in plants where large tonnages of salt are consumed every day. But even in smaller plants, combination storage and feeding units are proving valuable. This is because they cut down on the amount of floor space needed to store salt.

In plants where floor space is at a premium, salt is often purchased in bags to permit high stacking. Here, too, combination storage and feeding units can produce substantial savings. They permit the purchase of economical bulk rock salt—and reduce salt-handling costs to a minimum.

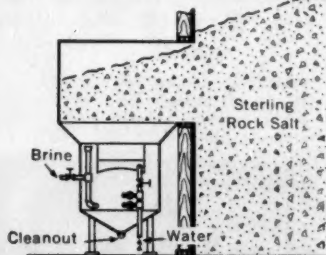
What about one of these units for your plant? Here are six of the most practical designs for combining salt storage and feeding. One of them—or an adaptation of the basic design—may be effective in saving floor space and lowering salt-handling costs for you.

**1. Filling dissolver from floor pile.** If salt must be stored in bulk on the same floor



as the dissolver (all dissolvers shown here are International's famous Sterling Model Lixator), an excellent feeding device is a portable belt conveyor. The best type for moving salt is made of aluminum with a rubber belt, and is between 16' and 20' long. The same conveyor moves salt not only from a floor pile into the Lixator, but also from a car or truck into the plant.

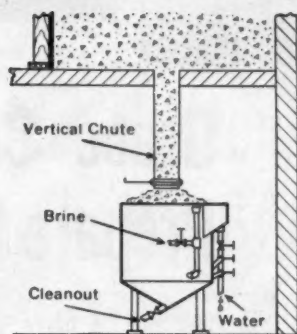
**2. Wall-type hopper,** bolted directly to an opening in a salt-storage bin. As long as



the salt supply in the bin is sufficiently high to permit gravity flow into the Lixator hopper, feeding will be automatic. When salt supply is no longer self-feeding, the operator stands on the salt in the bin and shovels directly into the hopper.

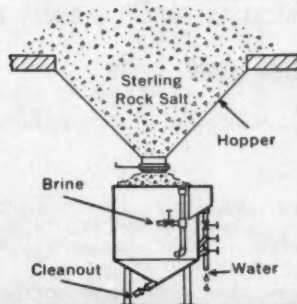
**3. Overhead storage with gravity feed into hopper.** This design is often used when uninterrupted salt feed is needed, but the storage floor has relatively little salt capacity. A cylindrical-type hopper directly under the hatch holds a large amount of salt for feeding the Lixator—and acts as a substantial secondary storage unit. Ordinarily, though, if salt can be stored above the Lixator, the next design is preferable.

**4. Overhead storage with vertical chute.** This direct-feed unit is a practical, econom-



ical way of operating the Lixator. If storage capacity on floor above is large enough, no hopper is needed, which means a considerable saving. Feed is automatic because of angle of repose for salt.

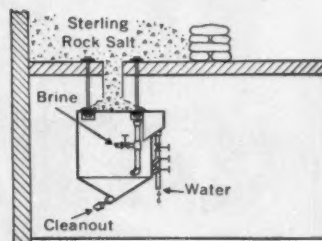
**5. Pyramid-type hopper design.** This is another variation of overhead feed, coupled



with large storage capacity. But if storage space on floor above is limited, this design is also practical. Salt can simply be dropped

into the hopper through a large hatch with a removable cover.

**6. Lixator hung above floor,** to save floor space. A very desirable design when



floor space is at a premium. Design here also shows use of a few salt bags to act as a storage-bin wall—in lieu of a permanent bin structure.

One final note about the equipment shown here. All Lixators operate on exactly the same principle. They vary only in size and capacity, and in methods of delivering salt to the dissolver unit. All Lixator designs are exclusive International Salt Co. developments, properly protected by patents and patents pending.

### TECHNICAL SERVICE WITH YOUR SALT

Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on salt storage and methods of feeding salt—just contact your nearest International sales office.

**International Salt Co., Scranton, Penna.**

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; and Richmond, Va.

FOR INDUSTRY, FARM, AND THE HOME—

## STERLING SALT

PRODUCT OF INTERNATIONAL SALT CO., INC.

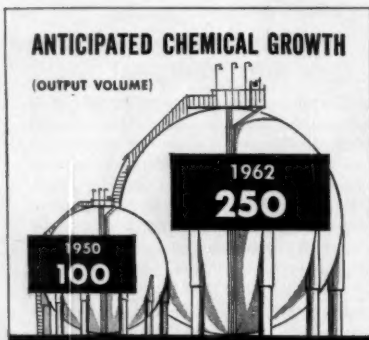


## ENGINEERING REPORTS:



**VICE PRESIDENT** and plant manager J. G. Carriere (standing), discusses plant features with General Electric's H. F. Hemker, Grace Plant Superintendent Charles Dougherty, and G-E Service Engineer John Thrithart.

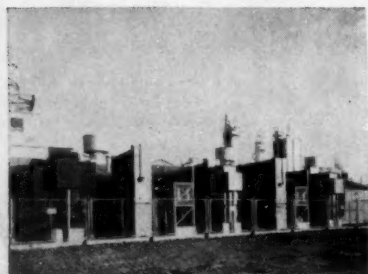
# Grace Chemical\* Installs Prepare New \$20,000,000



**BY 1962**, it is expected that the chemical industry will more than double 1950 production levels. In graph, 1950 production equals 100.

Source: Manufacturing Chemists Assoc.

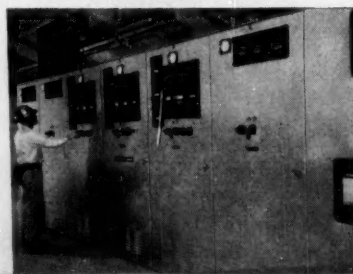
**INCOMING POWER** is "stepped down" by three G-E 7500-kva, three-phase, power transformers in the main substation. Whole plant uses grounded neutral system.



**General Electric Engineering Services** helped Grace Chemical design, install flexible electrical system to handle present and future power loads

\*Grace Chemical Co., division of W. R. Grace & Co.

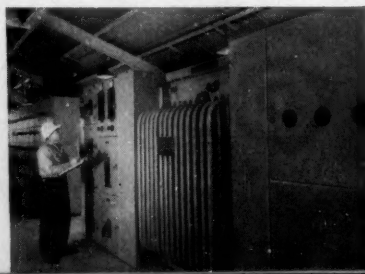
**COST SAVINGS** and operating convenience were obtained by locating 12,500-v. switchgear (below) inside, transformers (photo at left) outside the powerhouse.

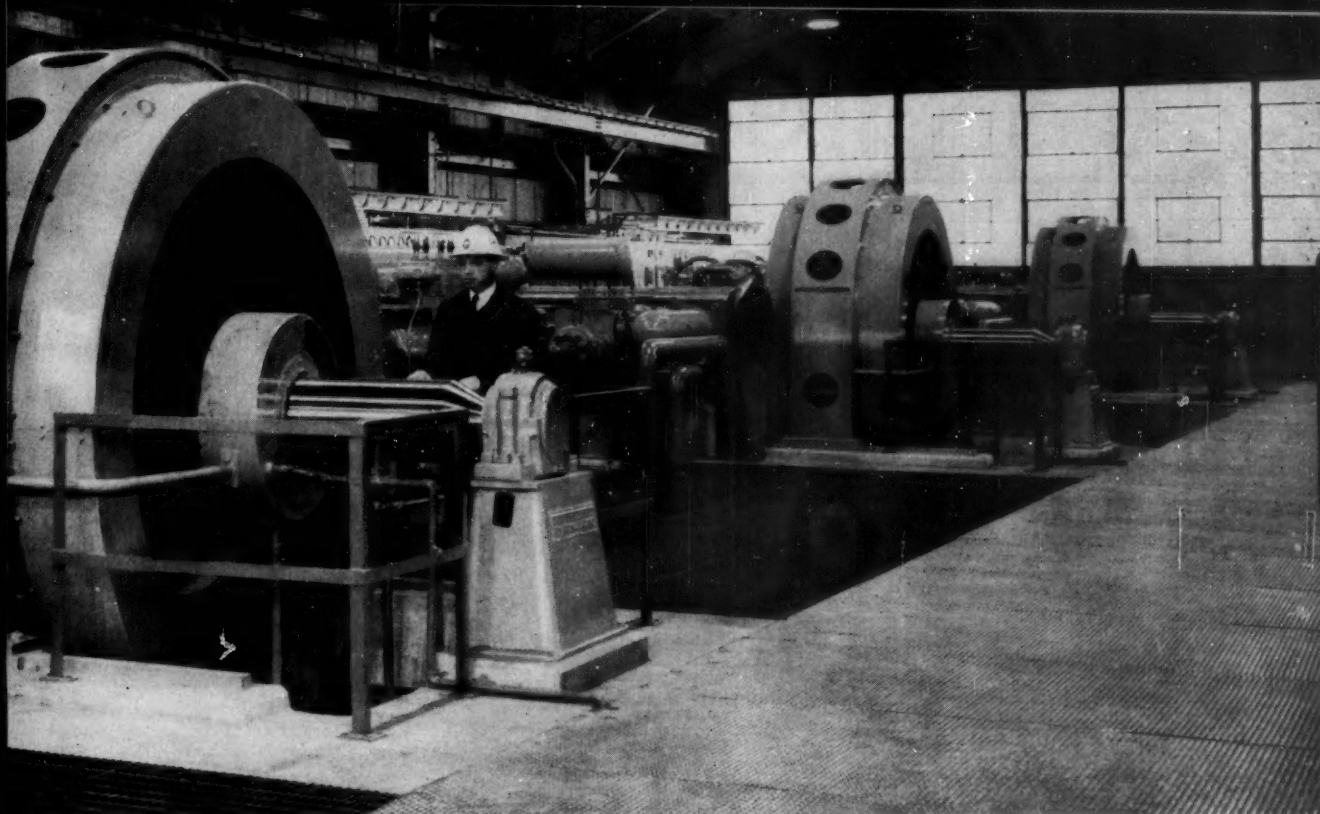


**PLANNING NOW** for future production is a major consideration in the fast-growing chemical and allied products industry. This booming industry is growing at the rate of about 7% per year (all industry growth averages only 3%) and the annual value of chemical products is now over 7% of the value of the nation's entire manufacturing output.

**THE GRACE CHEMICAL COMPANY**, a division of W. R. Grace & Co., anticipated growth and constructed the new ammonia-urea plant at Memphis, Tenn. Now in operation, the plant, described as one of the most modern in the industry, has an engineered electrical system that was planned to meet present

**POWER** is stepped down to 480 volts for the plant's process drives by this 1000-kva load-center unit substation, one of four installed in the plant.





**ONE OF THE OLDEST** industrial chemicals, ammonia, has found new uses in synthetic fibres, vitamins, rocket and missile fuel, and vari-

ous chemical intermediates. In Grace's modern process, three huge 3000 hp G-E motors drive Ingersoll-Rand gas compressors.

## Engineered Electrical System to Help Plant for Rapid Industry Growth

production requirements yet flexible enough for future expansion.

Cornerstone for expansion is the electrical system—designed and installed with the help of G-E engineering. A G-E service team headed by W. A. Raines, Manager—Industrial Sales, N. Y., and H. F. Hemker, Manager, G-E Memphis Office, worked closely with the Foster Wheeler Corp., main contractors, and Grace Chemical personnel to design and install the G-E electrical equipment that met the Grace requirements.

**VICE PRESIDENT JOHN G. CARRIERE** of the Grace Chemical Co., Plant Manager of the new installation, summed up a discussion of the plant facilities with

these words . . . "G-E engineering services did an excellent job for us; the electrical system has performed superbly."

**WHEN YOU EXPAND OR MODERNIZE,** G.E. has complete engineering services that will help you co-ordinate an electrical system designed for your specific needs. These specialists work with you

and your consultants to prepare your plant for present and future production requirements. Get in touch with your nearest G-E Apparatus Sales Representative early in your planning and write for bulletins CED-1966B and GED-2244 to General Electric Co., Section 681-10A, Schenectady 5, N. Y.

†Registered Trademark of General Electric Co.

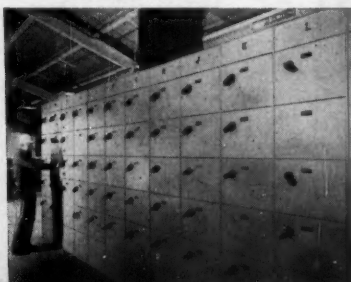
*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

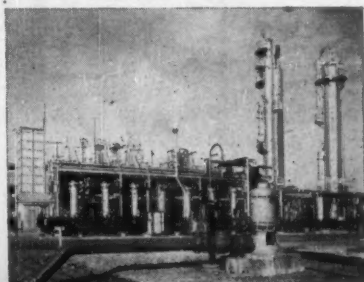
**CONTROL** for G-E compressor motors is provided by 4160-kv, metal-clad switchgear. Other electrical equipment also receives power through this line-up.

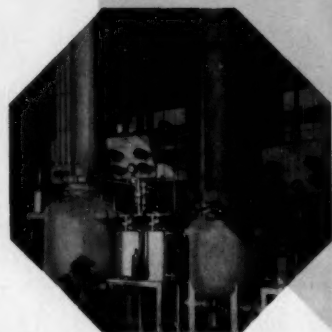
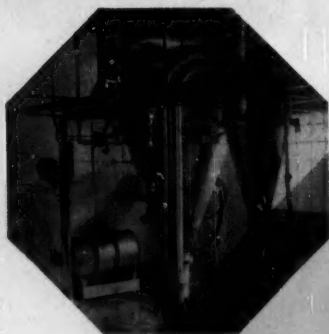


**EASILY EXPANDED** G-E motor control centers are co-ordinated with switchgear to provide complete selective tripping for the electrical system.



**WATER-WELL PUMP** is driven by 60 horsepower, G-E Tri-Clad† vertical motor. In the background is Grace Chemical Company's gas mixing equipment.





## **A Thousand - And - One Competitors Yet No Competition!**

Penick delivers over 7,000 products to a hundred-odd industries. In each field we compete with a different group of suppliers. Yet in all the world, Penick is unique!

No other chemical company offers quite the same remarkable product range, breadth and depth of experience and world-wide resources. No other offers the same knowledge of so many fields, diversity of research and manufacturing facilities and resourcefulness in meeting emergencies.

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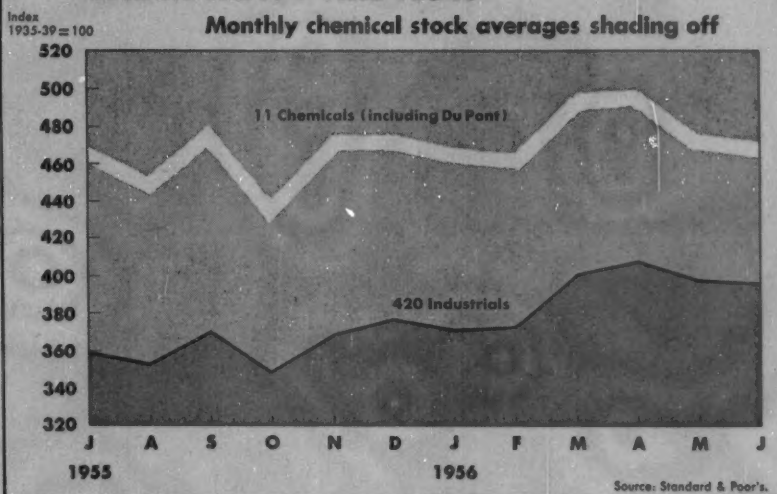
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# Charting Business

CHEMICAL WEEK  
July 21, 1956

## UNDER HEAVY FIRE NOW

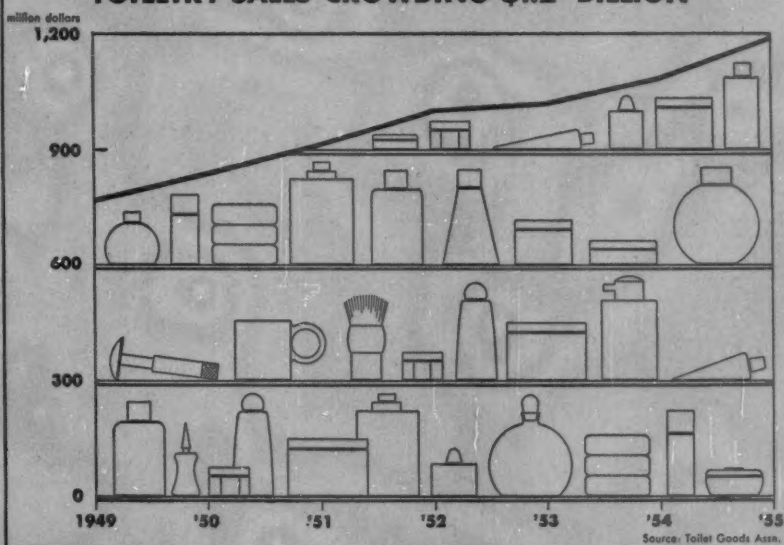
Monthly chemical stock averages shading off



**U**NDER HEAVY BARRAGE from profit-taking, the Federal Reserve Bank's anti-inflation policies, and a string of other factors, chemical stock price indexes (like Standard & Poor's) shaded off last month from recent highs. In early

July, however, prices began to recover from an "oversold" market. Chemical stocks were again helping lead others to former peaks. S&P's chemical index jumped to 487 the first week in July, 499.7 the second.

## TOILETRY SALES CROWDING \$1.2 BILLION

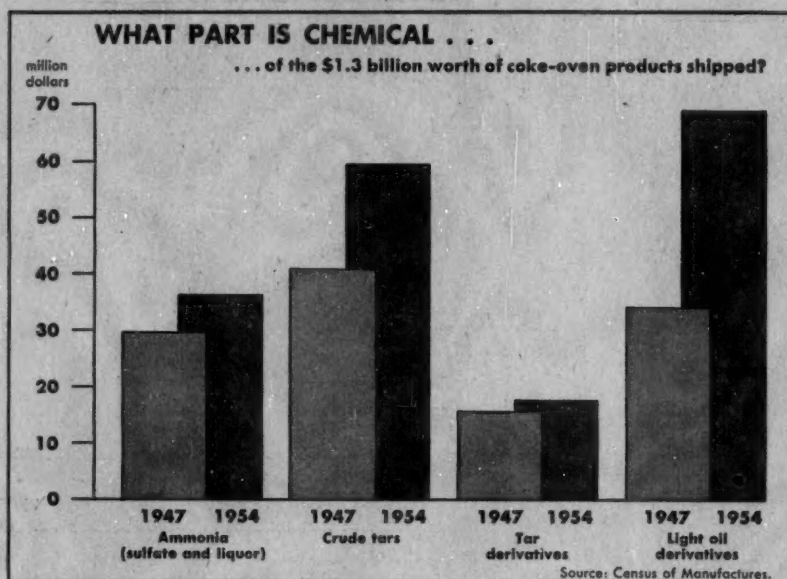


**T**OILETRY SALES were flourishing even when knighthood was in flower. But Middle Age damsels and gallants were slouches compared with present-day toiletry consumers (sales were close to \$1.2 billion in '55). One feature sales gain was made by dentifrices (8% over

'54's); tooth paste sales account for about \$145 million (or some 12%) of the total toiletry sales charted here (expendable items only). Dollars spent on shampoo preparations tallied nearly \$118 million; home permanent kits, \$75 million; deodorants, \$65 million.

# Charting Business

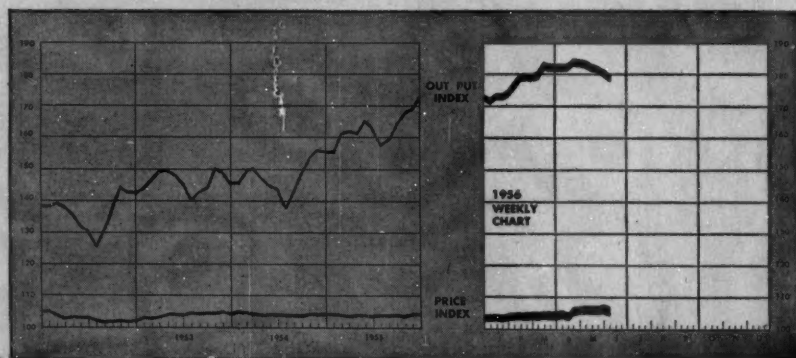
(Continued)



**A**S A RAW material and energy source, coal is enjoying a renaissance (see *CW*, June 30, p.76; July 14, p.25). But its classic role in coke production still continues to rate as a chief use. According

to the latest coke-oven by-products Census of Manufactures, the industry shipped \$1.2 billion worth of coke-oven-derived materials in 1954. Coke accounted for \$921 million; chemicals, \$194 million.

## BUSINESS INDICATORS

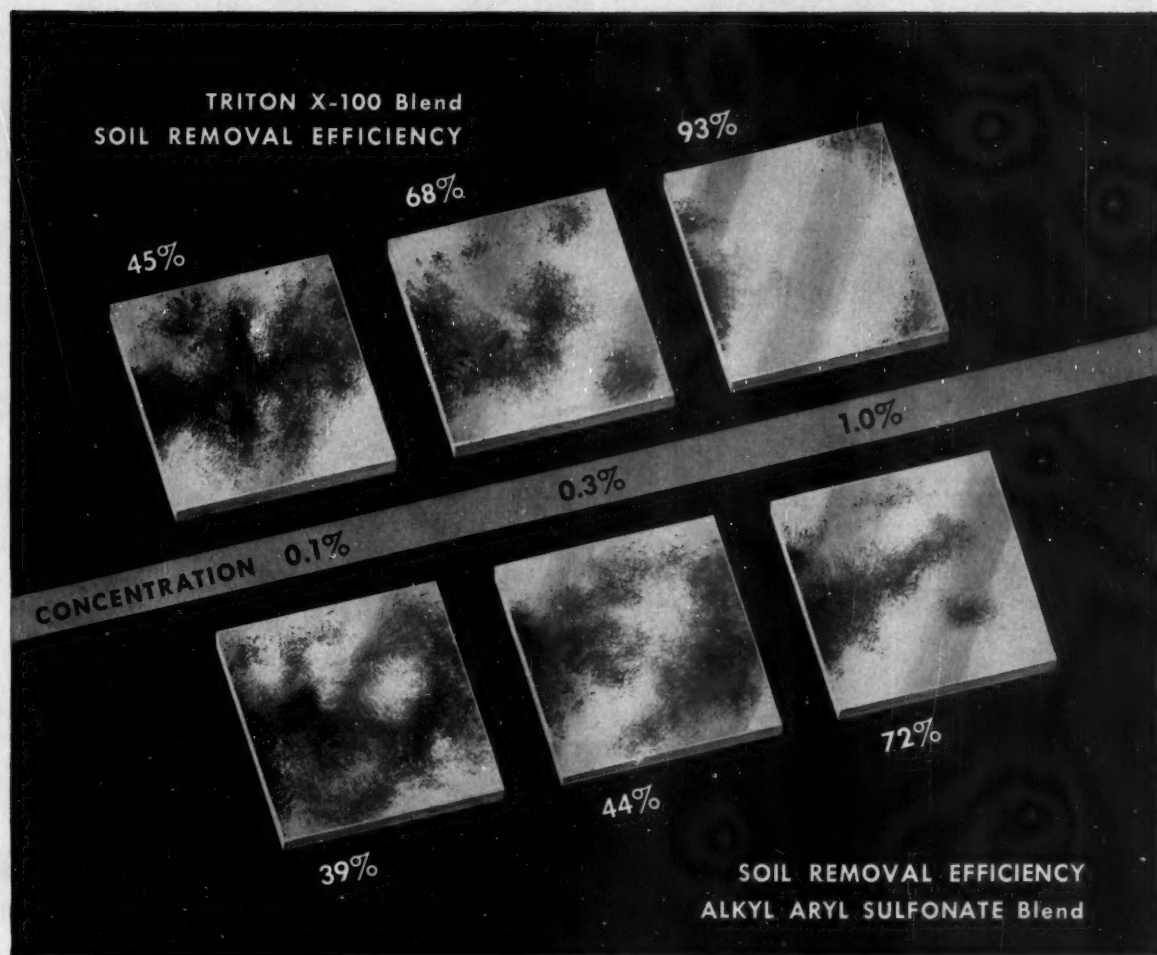


### WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100) . . . . .	175.0	175.9	155.1
Chemical Week Wholesale Price Index (1947=100) . . . . .	105.5	105.3	104.3
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) . . . . .	499.7	487.0	459.6

### MONTHLY INDICATORS—Wholesale Prices (Index 1947-49=100)

	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods) . . . . .	121.5	121.7	115.6
Chemicals and Allied Products . . . . .	107.1	106.9	106.8
Industrial Chemicals . . . . .	121.1	120.8	117.8



## See how much better **TRITON X-100** cleans

When blended with alkaline builders such as sodium tripolyphosphate, TRITON X-100 provides greater cleansing efficiency than anionic surfactants such as an alkyl aryl sulfonate.

This is substantiated by carefully controlled laboratory tests\* in which a 95/5 blend of STPP/TRITON X-100 has been compared against a 95/5 blend of STPP/alkyl aryl sulfonate. These tests show that the TRITON X-100 blend provides a soil removal efficiency from 15% to 54% greater at concentrations of 0.1%, 0.3% and 1%.

Interestingly enough, the soil removal efficiencies given represent the average efficiency of each blend on the same 11 substrates—aluminum, zinc, iron, furniture steel, stainless steel, brass, copper, silver, ceramic tile, linoleum, and melamine plastic. Visualized above is evidence that TRITON X-100 is unsurpassed as an all-surface cleaner. Yet, on an active ingredient basis, it costs substantially less than the usual form of alkyl aryl sulfonates.

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\*ASTM Bulletin No. 192, Sept. 1953—"A Dynamic Test for Detergency of Hard Surfaces"

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Sulphuric Acid • ORGANIC CHEMICALS: Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Glycol Ether Solvents • Ethylene Dichloride • Dichloroethylether  
Formaldehyde • Methanol • Sodium Methylate • Hexamine • Ethylene Diamine • Polyamines • Ethanolamines • Trichlorobenzene • Polychlorobenzene • Trichlorophenol

4167



New oil-modified alkyds—made with epoxy phenolic ethers and *Glycerine*—offer unusual resistance to solutions of soaps, alkalies and synthetic detergents. What's more, these new resins are said not to lose their gloss after exposure to the atmosphere.

The new alkyds, described in a recent patent\*, are made by heat treating components of conventional oil alkyds with a glycidyl mono-hydric phenolic ether or other ethers containing an alkyl epoxide group. A

typical formulation contains *Glycerine*, soybean oil, glycidyl ether of p-octyl phenol, and phthalic anhydride.

Surface coatings made with the new alkyds retain all the properties for which *Glycerine*-based alkyds are so well known—flexibility, toughness, adhesion and durability—plus added chemical resistance and gloss retention. In tests, the new resins were unaffected by a wide range of chemical agents which damaged other alkyd coatings.

*Here again, nothing takes the place of Glycerine.*

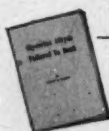
\*U. S. 2,731,429

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*C W Report*

## **Seaweed Colloids: \$10 Million Now —and Growing Fast**

*by Bernard Idson*

Along with its treasures of sunken galleons, the sea holds a rich store of chemical raw materials. The sirenlike beckon of one such prize—seaweed—is becoming an increasingly strong force in the chemical process industries.

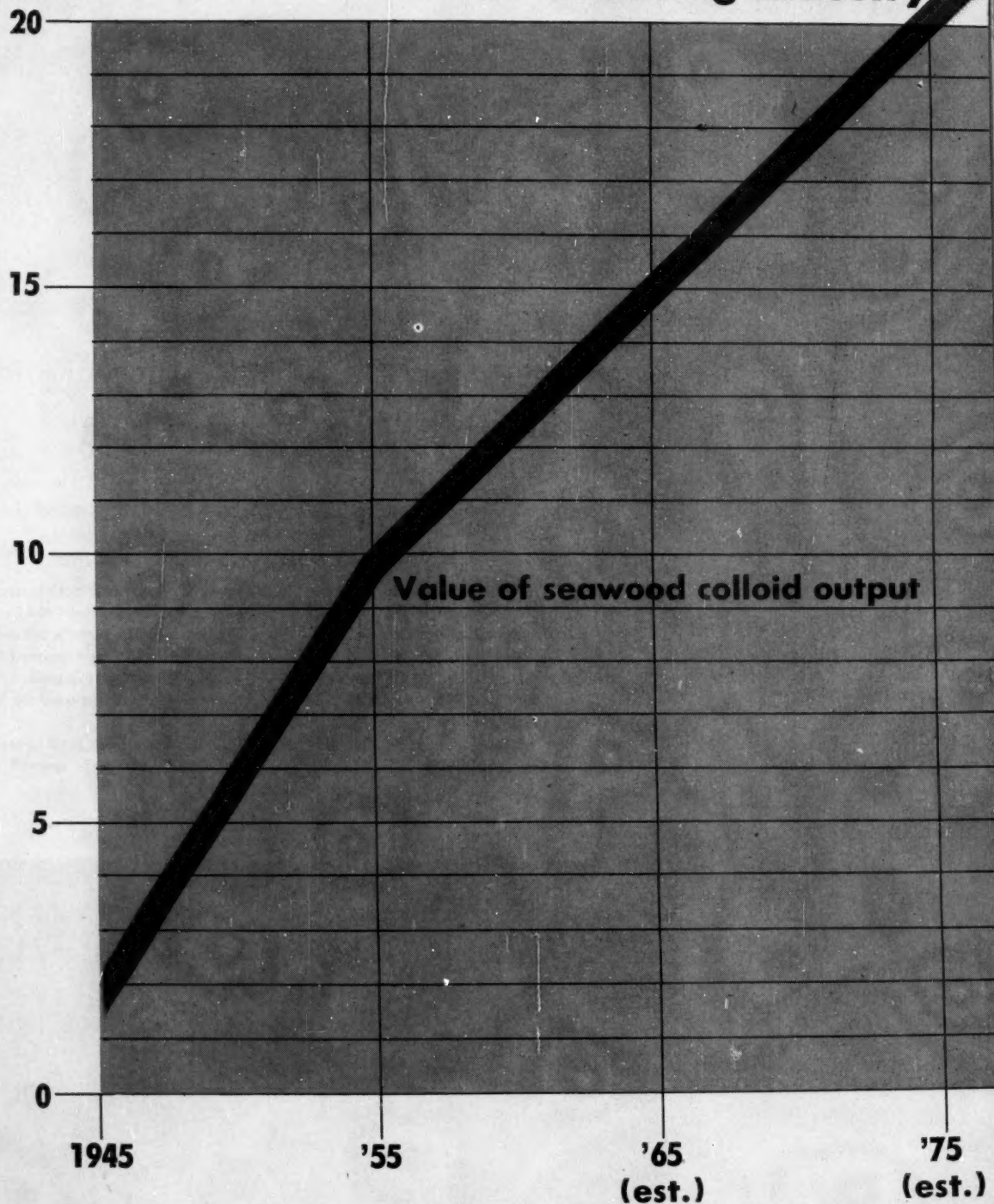
Since World War II, U.S. output of seaweed colloids has expanded from a relatively static \$2 million/year in 1945 to an estimated \$10.3 million/year in 1955. By 1975, gross sales for the industry are expected to near the \$20-million/year mark.

What's triggering this dynamic growth? Initially, a war-born need to replace Japanese, Irish, Scottish, and French seaweed colloid imports spurred U.S.

## SEAWEED CHEMICALS' GROWTH

Past, Present and Probable Future of a  
Fast-Climbing Industry

millions of dollars



enterprisers to turn to North American coastal waters for raw materials. In so doing, they fashioned a native seaweed colloid industry.

Now the industry's own peacetime momentum plus promising technological developments are carrying seaweed colloid production upward on a swelling tide. Algin, carrageenin, and agar are pushing competitive protein stabilizers and synthetic cellulose derivative gums hard for most markets. They have driven some of these materials entirely out of certain other markets.

Like most chemical process activities, however, seaweed colloid manufacture in the U.S. is keenly competitive. Five big producers—Kelco Co., Algin Corp. of America, Seaplant Chemical Corp., Kraft Foods Co., and American Agar & Chemical Co.—dominate the field, account for an estimated 95% (in terms of dollar value) of current seaweed colloid production.

Five other processors—Bowie's Inc.,

Chocolate Products Co., Robert A. Johnston Co., Stein-Hall Inc., and Jacques Wolf & Co.—make up the remaining 5%. Johnston and Chocolate Products, incidentally, produce carrageenin exclusively for captive consumption.

In addition to these 10 producers, several smaller phycocolloid processors exist, but contribute only sparingly to the over-all industry picture.

U.S. firms now turn out about \$5.3 million worth of algin and algin derivatives a year, \$4.5 million of carrageenin, and \$500,000 worth of agar (see *Seaweed Is Their Business*, p. 62).

What's the competition like? Traditionally, seaweed colloids vie for markets with gelatin, methyl and carboxymethyl celluloses, gum arabic, gum karaya, gum tragacanth, starches, and pectin.

And, in addition to these old-line contenders, seaweed colloids are bucking newer products like polyvinyl pyrrolidone, and polyacrylamides. Besides, phycocolloids overlap one another in many applications (see *Commercial Seaweed Colloids*, p. 64).

Seaweed colloid commercial applications are varied. For example, they're sold as: thickeners, humectants, coagulants, bulking materials. Newer end-uses (e.g. for flocculation, fibers, antibiotic carriers) are moving up.

Price-wise, seaweed colloids compete at a slight disadvantage, especially in their three big markets: food, pharmaceuticals, and cosmetics. Algin and carrageenin cost about \$1.25/lb. and agar about \$3.75/lb. These tags are to be figured roughly against 80¢/lb. for gelatin, 50¢/lb. for cellulose ethers, 25¢/lb. for the tree gums (arabic, karaya, and tragacanth), and 7-12¢/lb. for starches. Pectin is less of a threat at \$1.60/lb.

In actual use, however, the seaweed colloids may often prove more economical than lower-priced competitors, because small amounts of the former go a long way. What's more, the phycocolloids possess special properties not shared by competitive products.

Two current and critical seaweed colloid industry needs are: (1) mechanized harvesting methods; (2) accurate data on seaweed raw material locations.

## CLASSIFICATION

Marine seaplants are classified according to foliage color—brown, red green, and blue-green. Only brown and red seaplants, however, have industrial value (see table, p. 60).

The chlorophyll of brown seaweeds (like the giant kelp, *Macrocystis pyrifera*, from which algin is produced) is masked by other pigments,

## Meet the Author

BERNARD IDSON'S knowledge of seaweed colloids stems from professional contact with these lively products during four years as a research leader for a major U.S. food processor. He's now research director at Julius Schmid, Inc., a New York specialties firm preparing to diversify into pharmaceuticals. Author Idson has 12 years of research experience in ethical drugs, antiseptics and fungicides gleaned at Reed and Carnrick (now Block Drug) and West Disinfectant. He's a Ph.D. organic chemist—Brooklyn Polytechnic Institute, 1951—whose name may well have a familiar ring to CW readers. His report on antihistamines appeared in the March 31, '51, issue of this magazine. He also has a number of patents and papers to his credit in the drug field. Now a New Yorker, Idson will shift stakes to Leonia, N.J., which he, his wife, and two young children will soon be calling home.



## RAW MATERIALS FROM THE DEEP

### Principal Brown and Red Seaweed Beds off North America



which causes plants to appear almost black in color. The same is true of the reds (e.g. Irish moss)—the most prolific seaweed in number as well as variety of species. These plants appear a purplish black, especially when dried. Practically all Irish moss processed in this country is derived from the plant *Chondrus crispus*.

All together (green and blue-green plants included), some 17,000 species of seaweed have been identified. But only about 20 have received detail study. Of the many possible extracts from these thousands of species, only three have gained commercial importance.

Today seaweed colloid producers are concerned most with brown seaweed extracts (algin), and two red seaweed derivatives: agar (sometimes called agar-agar), and carrageenin.

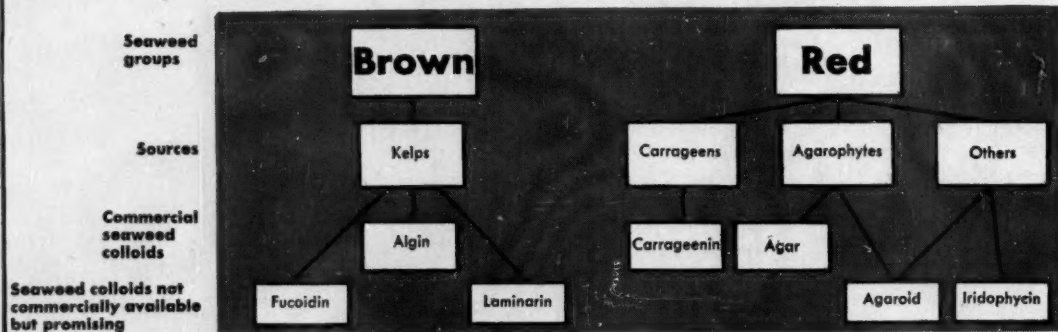
Four other extracts—fucoidin, laminarin, agaroid, and iridophycin—are easily obtainable (see chart below) but have no commercial value now.

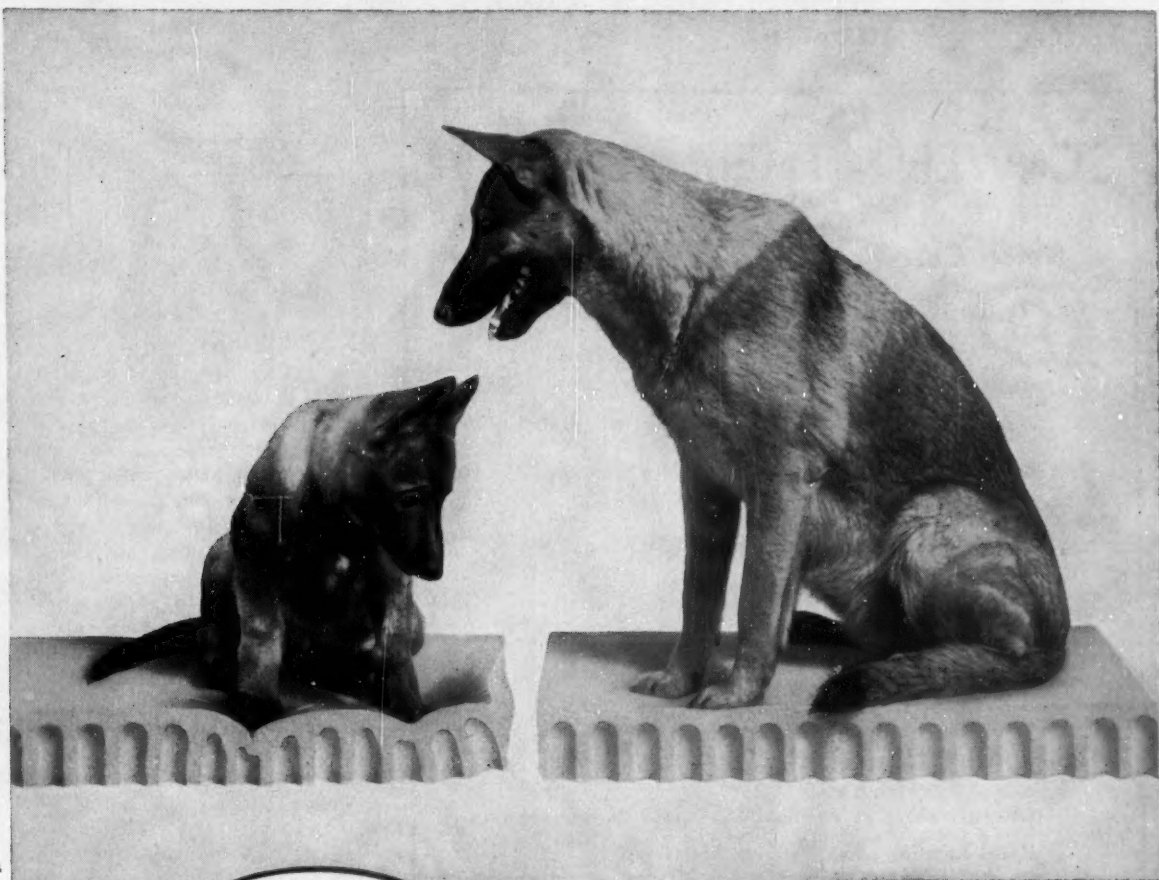
In practice, trade names of these seaweed colloids are used semi-generically in much the same way as starch from many sources is simply called "starch." All algin, for example, are called algin—regardless of their source or their chemical modifications.

Commercially, however, this lack of more precise definition is unimportant. In due time, the family relationships of these carbohydrates, together with knowledge of their chemical structures, will lead to a clearer basis for classification.

## COMMERCIAL COLLOIDS: Where They Come From

### A primer of seaweed botany





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# SEAWEED—THEIR BUSINESS

C W Report

## • Kelco Co.

**Output:** about \$5 million/year worth of algin and algin derivatives.

**Plant location:** San Diego, Calif.

**Note:** carries on the only large-scale mechanical harvesting of seaweed in the world.

## • Algin Corp. of America

**Output:** about \$1.5 million/year worth of carrageenin (Irish moss extract) and \$250,000/year worth of algin.

**Plant location:** Rockland, Me.

## • Seaplant Chemical Corp.

**Output:** about \$1.5 million/year worth of carrageenin.

**Plant location:** New Bedford, Mass.

**Note:** developing a mechanical harvester for Irish moss.

## • Kraft Foods Co.

**Output:** about \$1 million/year worth of carrageenin.

**Plant location:** South Portland, Me.

## • American Agar & Chemical Co.

**Output:** about \$500,000/year worth of high grade agar.

**Plant location:** San Diego, Calif.

**Note:** sole producer of agar in the U.S.

## • Others

Bowey's Inc. (Chicago)

Stein-Hall Inc. (New York)

Jacques Wolf & Co. (Passaic, N.J.)

Chocolate Products Co. (Chicago)

Robert A. Johnston Co. (Milwaukee) } Captive

**Combined output:** about \$500,000/year worth of carrageenin.

## PROPERTIES

While the three commercial seaweed colloids—agar, carrageenin and algin—display many properties in common (e.g., solubility, high solution viscosities, gel-forming ability, emulsifying power), they nevertheless show certain important individual characteristics.

Chemically, the phycocolloids are polysaccharides. Nearly all are anionic polyelectrolytes with negative radicals on each repeating polymer unit. Recent studies indicate that they occur naturally in mixtures of two or more kinds of salts, that the relative proportions of these salts vary with season, locale, and species. Actual chemical structures, however, are still largely murky.

**Agar:** Agar's distinguishing features are: (1) relatively low sol viscosity that changes only slightly with temperature; (2) sharp transition temperature from liquid sol to gel.

A wide temperature range between gelation and melting means agar-containing products "keep" in ambient temperatures. Another point in agar's favor: it is insoluble in cold water, soluble only in boiling water.

Chemically, agar is believed to be a linear polygalactose sulfuric ester. But growing evidence indicates that little—if any—sulfur is present as an essential constituent. It's likely that agar is a calcium polygalactopyranose complex. Calcium, magnesium, sodium, and potassium seem to be major basic constituents.

In the absence of more specific criteria, users of agar specify material that "duplicates the last lot" in physical and chemical properties. That's especially true in the case of imported agars. Reason: foreign products vary considerably in composition depending on the supplier, country of origin, mixture of agarophytes used in processing, etc.

In the U.S., on the other hand, uniformly high quality agar is turned out by one firm alone (American



A clear vinyl based coating is applied as a sealer for the terrazzo on this group washfountain. Since the coating penetrates the terrazzo, it resists the action of water, soap and cleaning compounds, prolonging the life of the terrazzo. Coating formulated by **Bradley Vrooman Company**, Chicago, Ill., for **Bradley Washfountain Company**, Milwaukee, Wisc.

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## COMMERCIAL SEAWEED COLLOIDS

Producer and Tradename	Composition	Applications
<b>Kelco Co.</b>		
Dariloid	Sodium alginate, sugar, & dextrin.	Stabilizer for ice cream, cheese, fountain syrups and toppings.
Dricoid	Sodium alginate, emulsifier, sugar and dextrin.	Combination ice-cream stabilizer and emulsifier.
Dariloid K	Propylene glycol alginate, vegetable gum and sugar.	Stabilizer for ice cream and ice milk.
Dricoid K	Propylene glycol alginate, sugar, vegetable gum and emulsifier.	Combination ice-cream and ice-milk stabilizer and emulsifier.
Sherbelizer	Propylene glycol alginate, sugar, and vegetable gum.	Stabilizer for sherbets, ices, syrups, and frozen fruits.
Cocoloid	Sodium alginate, carrageenin, sugar, and dextrin.	Suspending agent in chocolate milk.
Keltose	Sodium alginate.	Stabilizer for bakery icings, toppings, and meringues.
Kelco-gel	Sodium alginate, sodium phosphate, and calcium tartrate.	Gelling agent for dessert gels, and stabilizer in icing bases.
<b>Kelacid</b>	Alginic acid.	Tablet disintegrant, and hemostatic.
<b>Kelgin</b>	Sodium alginate, medium viscosity, 40 or 80 mesh.	Cosmetics, pharmaceuticals, foods, ceramics, adhesives, paper and textile sizing.
<b>Kelgin F</b>	Sodium alginate, low viscosity.	Films, coatings, and emulsions.
<b>Kelgin LV</b>	Sodium alginate, extra low viscosity.	Films, coatings, and suspensions.
<b>Kelgin XL</b>	Sodium alginate, high viscosity.	Cosmetics, pharmaceuticals, foods, dry compositions, and misc. industrial uses.
<b>Kelcosol</b>		Dental impression compositions.
<b>Kelmar</b>	Potassium alginate, medium viscosity.	Foods, drugs, cosmetics, miscellaneous acidic uses.
<b>Kelcoloid HVF</b>	Propylene glycol, alginate, high viscosity, 20 or 80 mesh.	Same as Kelcoloid HVF.
<b>Kelcoloid LVF</b>	Propylene glycol alginate, low viscosity.	
<b>Keltex</b>	Sodium alginate, high viscosity.	Textile print pastes, water paints, adhesives, polishes, textile sizing, boiler compounds, wall-board coatings and slime flocculation.
<b>Kelsize</b>	Sodium alginate, medium viscosity.	Corrugated paperboard adhesives, paper and paperboard surface sizing compositions and coatings, rubber latex thickening.
<b>Superloid</b>	Ammonium alginate, high viscosity.	Bodying and creaming rubber products, water paints, and other miscellaneous uses.
<b>Kelube</b>	Amine alginate, derivative.	Thickener for hydroxylated solvents.
<b>Algin Corp. of America</b>		
<b>Sodium Alginate, Regular Grade</b>	Sodium alginate, low, medium, and standard viscosities.	Textile printing pastes, stabilizer for ice cream and syrups.
<b>Extra-Refined</b>	substantially free of calcium, low, medium, and high viscosities.	Same as regular grade.
<b>SX 3</b>	highly dispersible.	Same as regular grade.
<b>QM</b>	highly dispersible, nonedible.	Polyvinyl emulsion paints, and latex thickening.
<b>Potassium Alginate</b>	Potassium alginate, low, medium, and standard viscosities.	Dental impression compounds.
<b>Ammonium Alginate</b>	Ammonium alginate, low and standard viscosities.	Latex creaming, ashless binder for ceramics.
<b>Calcium Alginate, Standard Grade</b>	Calcium alginate.	Film manufacture.
<b>Tablet Grade</b>	Calcium alginate, full swelling.	Tablet disintegrant.
<b>Alginic Acid</b>	Alginic acid.	Tablet disintegrant.
<b>Tablet Grade</b>	Alginic acid, full swelling.	Hemostatic products.
<b>Hemostatic Grade</b>		Products prepared with or in water.
<b>Gelcarin,</b>	Carrageenin (Irish moss extract), varying gel strengths from 18 to 350.	Milk or milk products.
<b>GS 13 to GS 350</b>	varying degrees of milk reactivity from 20 to 100.	
<b>MR 20 to MR 100</b>		
<b>Viscarin</b>	Carrageenin with all metallic ions replaced by sodium.	Bodying, stabilizing, and suspending agent that is soluble in cold water.
	Sodium carrageenate, non-gelling.	Toilet goods, cosmetics, foods.

## COMMERCIAL SEAWEED COLLOIDS

Producer and Tradename	Composition	Applications
<b>Seaplant Chemical</b>		
Seakem # 2 3 5, 6, 8, 9 10, 14, 15	Carrageenin (Irish moss extract), varying viscosities and gel strengths.	Stabilizing, thickening, and gelling agents for various food products.
Seakem # 101 102 104	Carrageenin plus added potassium chloride, varying proportions, viscosities and gel strengths.	General purpose gelling agents.
Seakem # 201 202 204	Carrageenin plus added potassium chloride and locust bean gum, varying proportions and gel strength.	General gelling and thickening agents.
Seakem # 402	Extract from Gigartina family and related forms.	Stabilizer, bodying agent and thickener for tooth powder, whipped cream, frostings and syrups.
<b>Kraft Foods Co.</b>		
Kraystay A X T E H C CX Z ZS D	Carrageenin (Irish moss extract), varying viscosities and gel strengths.	General stabilizing, thickening, and gelling agents for food, drug, cosmetic and industrial products.
Krageleen	Milk soluble mixture of carrageenin and other vegetable gums.	Stabilizer for ice cream and other frozen desserts.
Kragel 17 E.S.		Imitation jellies for bakery products. Combination emulsifier and stabilizer for ice cream.
<b>American Agar and Chemical Co.</b>		
Agar, Bacteriological Grade	Agar, extremely clear, free from organisms and impurities, good gel and surface hardness.	Microbiology and orchid culture, research in physical and colloid chemistry, photography, pharmacy and topical medicine.
Medicinal Grade	excellent color, tasteless, odorless, and free from irritants.	Laxative, and ingredient of health foods.
Dental Grade	high gel strength and resilience, high solubility and excellent stability.	Impression materials, wire-drawing lubricants, wine and juice fining, and luxury fabric sizing.
Industrial Grade	same as Bacteriological Grade but less clear.	Canning jellied fowl, fish and meat, stabilizing sherbets, ices, cheeses and bakery products, confectionery, and preserves.
<b>Jacques Wolf &amp; Co.</b>		
Gelloid ER	Calcium carrageen sulfate.	Various foods, cosmetic, pharmaceutical and industrial uses.
Gelloid 50	Highly refined calcium carrageen sulfate.	
<b>Stein-Hall Inc.</b>		
Hallmark Irish Moss extracts	Irish moss extracts.	For stabilizing ice cream, chocolate milk, toothpaste, etc.; for beer clarification; for other industrial uses.
Stabiloids		
<b>Bowey's Inc.</b>		
RM 3543 stabilizer	Irish moss extract and sugar.	Various food, cosmetic, pharmaceutical and industrial uses.

# STEPS IN THE MAKING OF A COLLOID

## How Commercial Processes Take Chemicals Out of Seaweed

	Agar	Algin	Carrageenin
<b>1 Pretreatment</b>	Soak and wash with fresh water for about 12 hrs.	Soak in mildly acidified water for several hours.	Wash briefly with cold fresh water.
<b>2 Extraction</b>	Extract under steam pressure (15 psi. for 6 hrs.); filter and re-extract twice more.	Extract alginic acid as soluble sodium alginate with cold or slightly warm alkaline water (pH 10).	Extract to a 1% gum solution 2-4 parts seaweed/100 parts of hot (slightly alkaline) water.
<b>3 Filtration &amp; Clarification</b>	Filter hot with Filtercel through a filter press; cool and gel clear amber liquid for 24 hrs.	Centrifuge; treat with Filtercel and charcoal; filter.	Allow residue to settle; treat supernatant liquid with Filtercel and charcoal; filter.
<b>4 Freeze-Thaw Purification</b>	Chop gel; freeze for 2 days at 14F; thaw at 50F.		
<b>5 Vacuum Evaporation</b>	Remove excess water		Remove about half the water to give a 2% gum solution.
<b>6 Crude</b>	Tray-dry with forced hot air (215F)	Precipitate alginic acid with acid and/or alcohol.	
<b>7 Final Purification</b>	Bleach with 1% sodium hypochlorite solution; neutralize with sodium sulfite solution.	Dissolve in alkali solution; re-precipitate with acid and/or alcohol.	
<b>8 Final Product</b>	Re-dry with forced hot air (215F) to 20% moisture; grind and package.	Treat with carbonate, metal oxide, or hydroxide to form sodium, salt, etc; filter; dry; grind and package.	Drum dry; grind and package.
<b>% Yield*</b>	5-8	14-40	60-80
<b>Selling Price</b>	\$3.50-4.00/pound	\$1.00-1.50/pound	\$1.25-1.75/pound

\*Basis: dried seaweed

**C W Report**

Agar & Chemical Co.). Processing techniques are modern, quality control is stressed, pains are taken to procure uniform species of seaweed.

**Carrageenin:** On an equal weight basis, carrageenin—the commercial seaweed colloid extract from Irish moss—forms weaker gels than does agar. In carrageenin's favor, however, is the fact that the variation in gel strength and temperature of gelation is in proportion to the specific electro-

lytes present in the solvent.

Gel properties are affected not only by inorganic electrolytes (like potassium), but even by organic solutes—sugars, alcohols, and glycols. Gels formed with carrageenin are thermally reversible, melt at higher temperatures than those at which they form.

Carrageenin is sold largely on a viscosity basis. Commercial viscosity ranges are broad—from, say, 50 to 2,500 centipoises in a 2% solution—

# IN THE NON-IONIC Spotlight

**NONIC®  
300**

**NONIC®  
218**

**Versatile Surfactants**

**Both of these popular Sharples surface-active agents are winning many new users through their highly desirable properties.**

They are powerful detergents and wetting agents as well as effective emulsifiers. Both are highly stable to alkalis and NONIC 300 is also stable in the presence of strong acids and oxidizing agents. Excellent foaming qualities are obtained with both NONIC 218 and NONIC 300. Both are highly soluble in water and compatible with a wide variety of chemical compounds. NONIC 218 has exceptional grease cutting power and is particularly suited to formulation with quaternary ammonium salts.

NONIC 300 is polyethylene glycol alkylphenyl ether and NONIC 218 is polyethylene glycol tert-dodecylthioether. Other NONIC surfactants are available which are similar chemically but modified to obtain special properties.

These versatile NONIC surface active agents are well worth investigating for use in your products. Call or write us for samples and full technical information.



**Pennsalt  
Chemicals**

**SHARPLES CHEMICALS Division**

**PENNSYLVANIA SALT MANUFACTURING COMPANY**

500 Fifth Ave., New York • 80 E. Jackson Boulevard, Chicago • 106 S. Main St., Akron  
Executive Office: Philadelphia, Pa.

Martin, Hoyt & Milne Inc., San Francisco • Los Angeles • Seattle • Portland

Shawinigan Chemicals, Ltd.: Montreal • Toronto

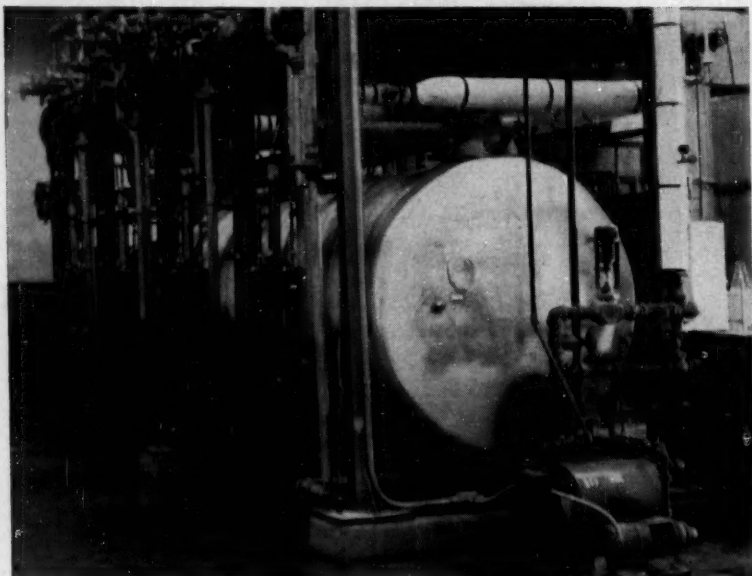
Airco Company International, New York

**EXTRA FAST DELIVERY**  
of standard Pfaudler glassed reactors now!

# Pfaudler

Pfaudler Corrosioneering News Published by The Pfaudler Co., Rochester, N.Y.

## How Sylvania heats, cools four separate solutions to $\pm 1^\circ$ accuracy... in one system



The problem at Sylvania Electric Products, Inc. was to find a system that would hold four different solutions to within  $1^\circ$  F. of a predetermined temperature. These solutions, which are used in the television tube screening and lacquering processes, may be required for use between  $55^\circ$  and  $70^\circ$  at any time, and are supplied to the system at anywhere from  $38^\circ$  to  $78^\circ$  F.

Thus, the system must either heat the solution or cool it. It must also vary the degree of heating or cooling. And it must switch from heating to cooling, depending upon the change of set point.

Now in operation at Sylvania's Seneca Falls, N. Y. plant is the Pfaudler system shown above. It does all the thermal gymnastics mentioned, and still holds to within  $1^\circ$  accuracy on all four solutions.

This system, completely designed and equipped by Pfaudler, includes heat exchangers, all control valves, the heating equipment, refrigeration equipment, automatic controls, panel board and all auxiliary equipment. It is typical of the type of project engineering Pfaudler now offers. Let us give you the complete story on this added Pfaudler service.

## New "hardware" for glassed vessels

Spray valve eliminates manual cleaning of vessel... high-pressure valve takes up to 300 psi... "Christmas Tree" inlet mixes 5 liquids at once... outlets and line valves work by remote control.

To minimize build-up of PVC resins or similar products in a glassed steel vessel, Pfaudler offers a new glassed spray valve (Fig. 1). The liquid spray from this valve covers the entire interior surface of the kettle. Its spray has sufficient inten-

sity and coverage to perform a good job in any size vessel up to 120" diameter. The major part of the liquid stream is directed upward toward the dome while a smaller portion is aimed  $30^\circ$  downward toward the agitator and baffle. When the stem with spreader is rotated, the spray pattern turns, thus covering all surfaces with a direct spray.

**New valve for high pressures**  
With the corrosion resistance of glassed steel inside, and the brute

strength of cast iron outside, the new Pfaudler high-pressure valves take up to 300 psi, handle corrosive products ranging up to pH12 and  $212^\circ$  F. (Resists all acids except hydrofluoric, of course.) A big help here is also the fact that sticky products—even polymers—rarely ever stick to glass, so you get smoother flow through the valve.

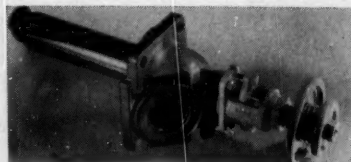


Fig. 1 New Pfaudler glassed spray valve speeds cleaning of glassed reactors.

The new "Christmas Tree" sight box and multiple inlet assembly (Fig. 2) now offered by Pfaudler has four openings above and one inlet beside the sight box. The box itself (available in four sizes) has a sight glass on front and back, so you get plenty of light to see through the  $4"$  to  $7\frac{1}{2}"$  clear PYREX brand glass. With the five openings, you can admit from one to five different liquids at once into the vessel.

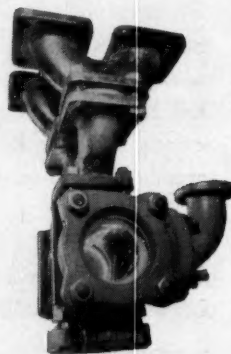


Fig. 2 New Pfaudler multiple inlet assembly with sight box.

Nobody scrambles around underneath reactors, when you have the new remote control features now available on Pfaudler valves. For both outlet and line valves, three distinct types of remote control are possible: (1) air-pressure or spring-pressure closing, (2) chain operation of both the operating and wiping wheels, (3) flexible shaft operation of valves. All of which save you labor, possible hazard of accidents, and time.

# Corrosioneering News

Quick facts about services and equipment available to help you reduce corrosion and processing costs.

## Get continuous centrifuging in your continuous processes

For continuous removal of solids from one or two liquids . . .

For continuous concentration of solids by removal of liquid from slurries . . . and discharge of solids in a predetermined dry state . . .



It is no longer necessary for your centrifuging to be an expensive and time-consuming "batch" type operation.

While rotating at full speed, the Titan Superjector Centrifuge discharges solids deposited within the centrifugal bowl and thus cleans itself.

### How it works

A simple yet unique design enables the Superjector to work automatically like no other centrifuge.

Solids are discharged through peripherally placed slots. These slots periodically are opened and closed by a telescopic action actuated by hydrostatic pressure. This pressure is built up by centrifugal force.

The concentration of solids and clarity of liquid produced can be adjusted within wide ranges. Solids can easily be concentrated to as low as 40% moisture content. Liquids can be rendered crystal clear.

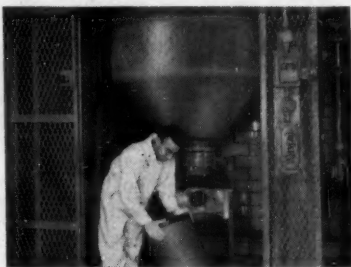
If you can see uses for such an automatic centrifuge in your operations, write for your free copy of Bulletin No. 930, "Titan Superjector Centrifuge." Or ask your Pfaudler representative for details.

## Now—fastest drying of corrosive products with Pfaudler dryer-blender

How do you go about drying highly corrosive products in your plant?

If you're not using a Pfaudler conical glassed steel dryer-blender you may be spending too much time and money on this process.

**4-day drying yield ready in 7 hours...** reported one user making product containing acid halides. Filling and emptying the Pfaudler conical glassed steel dryer-blender is quick and easy. It has a 1½ foot diameter opening for filling and a single 8 inch discharge nozzle for the 4 ft. and 6 ft. units.



At Eastman Kodak Company this Pfaudler dryer-blender, used for drying a corrosive organic halide, has reduced time required by previous methods (4-6 days) by 75%.

Most of the labor cost and time previously spent handling trays of vacuum dryers is saved.

When in use, the dryer slowly revolves, tumbling its contents and quickly providing an evenly blended, evenly dried product.

**Why Pfaudler dryer-blender is fastest** These structural features built into the Pfaudler glassed steel conical dryer-blender make it your fastest and most economical tool for drying and

blending highly corrosive products:

- Solid one-piece construction of inner vessel for maximum strength, greatest corrosion resistance and easiest cleaning.
- Right amount of space between inner vessel and spherical portions of jacket heads insures effective drying with no waste of steam or hot water.
- No joints or clamps to break up the drying surface area. This heated surface area is maximum; therefore drying time is shortest.
- Vacuum exhaust tube is located up and out of the product while the unit is in operation. There it is able to remove vapors most efficiently.

### Dries acids and alkalis

You can use Pfaudler conical dryer-blenders for every acid except hydrofluoric and for alkalis up to pH12 at 212° F. Thus you get the same flexibility you are already familiar with in Pfaudler glassed steel reactors, heat exchangers, columns and other equipment for tough corrosion jobs.

These dryers range in volume up to 165 cu. ft. working capacity. They are available in four different diameters: 2 ft., 4 ft., 6 ft., and 8 ft. Internal pressures may range from full



vacuum. Each unit is tested to meet ASME code specifications.

It's easy to get complete details. Just write for Data Sheet 26 or contact your Pfaudler representative.

Designers and fabricators of glassed steel and alloy equipment for the chemical processing industry. Factories in: Rochester, N. Y.; Elyria, Ohio; Leven, Fife, Scotland; Schwetzingen-Baden, Germany; Kobe, Japan. Sales offices in principal cities of world.

**THE PFAUDLER CO., Dept. CW-7, Rochester 3, N. Y.**

Please send me:

- ☐ Bulletin 511 — "Pfaudler Services."
- ☐ Bulletin 886 — "Pfaudler Pipe, Valves and Hardware."
- ☐ Bulletin 930 — "Titan Superjector Centrifuge."
- ☐ Pfaudler Data Sheet 26 — Dryer-blenders.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

State \_\_\_\_\_



depending on the carrageenin product used.

As in the case of agar, hot water is needed to solubilize carrageenin. Long exposure to high temperature however, can degrade solutions. This degradation is hastened by acidity.

Carrageenin is normally extracted as a mixed salt of a galactan sulfate. More specifically, it's a mixed salt sulfate ester of a polysaccharide complex. Structurally, carrageenin is tentatively estimated to contain one terminal galactose group for every 10 units. Molecular weight averages 200,000. Normal cations present are sodium, potassium, calcium and magnesium.

**Algin:** Water soluble derivatives of alginic acid are generally referred to as "algins." Most common of these is sodium alginate.

Sodium alginate forms gels with acids and calcium salts. These gels, however, are not thermally reversible, but rather, "chemical" in nature, because of cross-linkages of carboxyl

groups through bivalent cations such as calcium. Algin salts of alkali metals, ammonia, and many organic bases are soluble in water. In contrast, alginates of most divalent and polyvalent metals are insoluble.

Even at low concentrations, algin impart high viscosities to solutions. Careful manufacturing controls enable producers to supply a range of product viscosities from about 100 to 2,500 centipoises at a 1% concentration. Viscosity increases sharply with concentration.

Alginic acid's accepted structure indicates a linear chain of 1,4 linked, beta-D-mannuronic acid residues. This structure probably applies only to a small part of the molecule.

Unlike other polysaccharides, alginic acid is unique in that repeating D-mannuronic acid units make up the known structure. Commercial sodium alginate ranges in molecular weight from as low as 30,000 to as high as 300,000.

## RAW MATERIALS

The oceans abound in seaweed. But the U.S. seaweed colloid industry operates under the marked disadvantage of not knowing where all the important seaweed beds lie.

Until recently, few attempts had been made to survey seaweed resources

of maritime countries. Reasons: lack of interest; difficulties involved in accurately assessing anything below the sea's surface.

Actually, the first coordinated effort to define areas possessing commercially significant supplies of red and brown seaweed was made at the First International Seaweed Symposium in Edinburgh in 1952.

Data gathered there shows that brown seaweeds flourish mostly in temperate and polar zones (where they grow prolifically). Brown plants shun tropic regions. Main supply sources are on both U.S. coasts, and in north-west Europe (Norway, Britain, France, and Spain).

Survey approximations indicate over 19 million tons off Alaska; 14 million tons from Puget Sound to San Diego; another 8.5 million in lower California waters around San Diego and Mexico's Cedros Islands (see map, p. 60).

About 1 million additional tons exist off southwest Nova Scotia; between 4-11 million tons pack the Sargasso Sea; Norwegian waters may hold about 20 million more tons; Scottish waters about 10 million. Less prolific beds lie off Japan, Chile, South Africa, Australia, and New Zealand.

Only minimal reliance should be placed on these figures because of the crudeness of surveying techniques. Newer methods of air-photo and geological surveying should add considerably more accurate information to the industry's store of knowledge on its raw material resources.

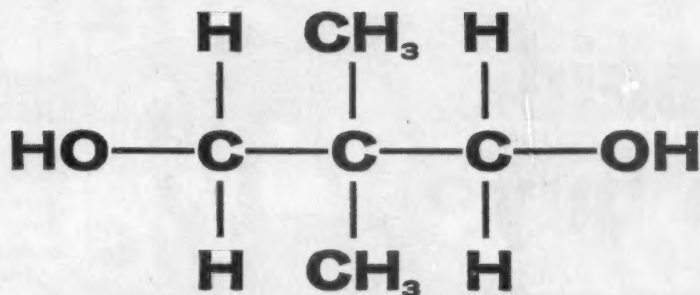
As far as red seaweed resources are concerned, even less data is available. It's known, however, that red sea-plants exist principally on both our eastern and western shores. In contrast to the brown varieties, reds flourish in more temperate climes, may be found in the warmer waters of Florida, California, Mexico (and abroad in India, Malaya, Australia, and Pacific isles).

These last-named regions, in fact, abound with red seaweed supplies, are eyeing colloid production as a new industry. Such new competition might well be felt by seaweed colloid industry here.

Obviously then, improved surveying techniques to locate raw material supplies would strengthen the U.S. industry's position immeasurably, assure the growth the producers are expecting. But another answer must be forthcoming too.



ALONGSIDE: Nova Scotia kelp for Algin Corp.'s Rockland plant.



In the production  
of polyester resins and plasticizers  
and as a polyurethane intermediate

# neopentyl glycol

## builds stability into the molecule

### DATA ON EASTMAN NEOPENTYL GLYCOL

<b>Characteristics:</b>	<b>Typical</b>
Short chain length	<b>Properties:</b>
Symmetrical	Form
Reactive	Crystalline Solid
	Color
	White
	Melting Point
	124°-130°C
	Purity
	96% Minimum

This new Eastman isobutyraldehyde derivative offers the resin formulator a compact, symmetrical molecule with two methyl side groups. Thus, the use of neopentyl glycol in the production of polyester resins and plasticizers results in improved all-around stability with excellent resistance to thermal degradation and hydrolysis.

Neopentyl glycol should be investigated either alone or as a modifier of other di- and polyols in the manufacture of polyurethane type polyester intermediates. Ethylene oxide reacts readily with neopentyl glycol to yield polyethers which also show promise as raw materials for polyurethane resins. The two primary hydroxyl groups in neopentyl glycol exhibit excellent reactivity, and polyesters prepared from it appear to impart their own stability to the polyurethanes made from them.

We invite you to send for samples and find out for yourself the advantages neopentyl glycol can give to your product. Write us at Kingsport, Tennessee.

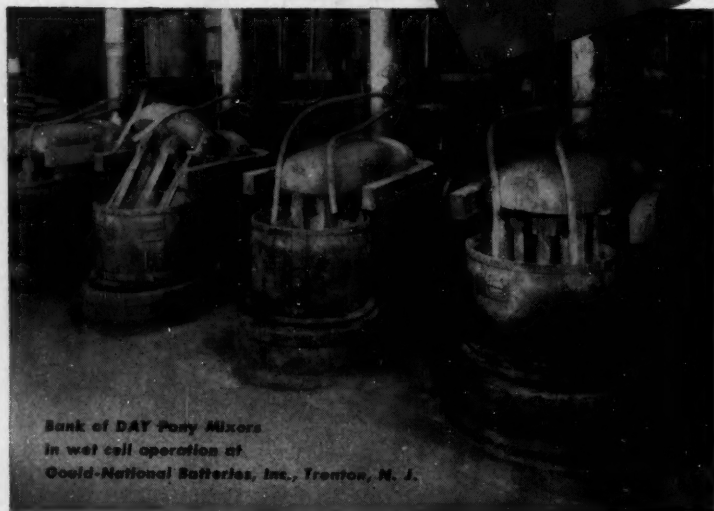
## Eastman CHEMICAL PRODUCTS, INC.,

KINGSPORT, TENNESSEE, subsidiary of EASTMAN KODAK COMPANY

**SALES OFFICES:** Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—1300 Main St.; St. Louis—Continental Bldg. **West Coast:** Wilson Meyer Co., San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S.W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.

**it paid  
to buy**

**DAY**



Bank of DAY Pony Mixers  
in wet cell operation at  
Gould-National Batteries, Inc., Trenton, N. J.

## **GOULD-NATIONAL BATTERIES, INC. now blends 250 lbs. of heavy paste in 25 minutes in a DAY PONY MIXER.**

Considerable production cost savings have been achieved by this outstanding Company using DAY Pony Mixers. Despite the fact that the product being mixed is very heavy and highly acid, operation is virtually trouble-free.

There are no bearings or stuffing boxes in the product zone. Extra rugged construction assures absolute rigidity. Planetary mixing action plus agitator blade contouring, delivers radial and lifting mixing over entire depth of can.

It will pay you to investigate the increased production plus cost savings you will receive with DAY mixers. Write for Bulletin 500.

FOUNDED 1887



in mixing equipment

means longer life span

### **THE J. H. DAY COMPANY**

4932 BEECH ST., NORWOOD, CINCINNATI 12, OHIO  
Division of Cleveland Automatic Machine Company

Quality equipment for baking, paint and varnish, printing ink, chemical, rubber, pharmaceutical, cosmetics, paper and pulp, explosives, food, ceramics, candy, soap, sugar and milk products.

Eastern Canada: Brantford Oven & Rack Co., Ltd., Brantford, Ontario  
Mexico: T. de la Pena e Hijos, S.A., Nazas 45-A, Mexico 5—D.F.

## **MECHANIZED HARVESTING**

Perhaps even more urgent than the need for seaweed resource data is the demand by the U.S. seaweed colloid industry for mechanized harvesting techniques. Collecting seaweed from the ocean is probably the biggest single cost factor in determining selling prices of colloids. Reason: raw material supplies are still obtained mostly by slow and costly hand-gathering methods.

Prior to 1946, the only flourishing marine colloid industry in the world was Japan's (with its cheap labor market). Cut off from this inexpensive raw material supply during World War II, U.S. competition sought means to lower its own production costs by mechanized harvesting.

Today, Kelco Co. harvests floating giant kelp with motor barges equipped with underwater cutting bars and chain conveyors that automatically gather the giant plants.\* Kelco boasts the only commercial operation of this kind.

A direct contrast to Kelco's relatively simple, but effective, mechanical harvesting of floating kelp is found on the eastern U.S. seaboard (and in England and other countries) where brown seaweed must be wrested from rocks at 6 fathoms or more depths.

In Massachusetts and Maine, for example, seaplants are gathered by hand-picking or racking. Divers collect materials using knives and grappling hooks. In some maritime rural communities, beach-walkers wait for storm-tossed plants to be washed ashore, gather, dry, and sell their find to seaweed colloid firms for processing.

One very recent development in the industry may foreshadow the end of such primitive gathering methods (for Irish moss, at least). About a month ago, Seaplant Chemical Corp. bared its interest in a new mechanical reaper which the firm is developing with Battelle Memorial Institute.

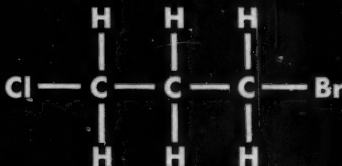
Initial trials have already begun in waters off New Bedford, Mass., are expected to continue throughout the summer.

Many of Seaplant's mechanical harvester details are being kept under wraps but, if successful, the device might extend economic harvesting of Irish moss to 6-fathom depths—a limit well beyond that reachable by hand gathering.

\*Bigger even than the famed Redwood trees.

For a versatile, multipurpose intermediate

try **TMCB**



**1-Bromo-3-chloropropane**  
(Trimethylene Chlorobromide; TMCB)

TRIMETHYLENE CHLOROBROMIDE IS UNMATCHED as a versatile and reactive intermediate for the formation of long-chain aliphatic hydrocarbon derivatives, and it offers many possibilities for substitution reactions. It can be cyclized and is thus effectively employed in the manufacture of anaesthetic grade cyclopropane.

The 3-carbon chain is readily extended by replacement of the bromine atom in reactions with cyanides, Grignard re-agents, various amines, metal alkylates and similar groups. This results in chloropropyl compounds such as:

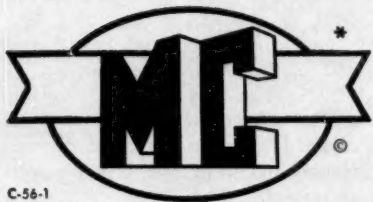
Chloropropyl cyanide  
Chloropropyl quaternary  
ammonium bromide  
Chloropropyl dialkyl amines

The chlorine atom can be left intact for further reactions by which symmetrical or unsymmetrical substituted propanes are formed.

TMCB is clear, colorless liquid — pure and highly stable. The boiling range is 2°C. maximum.

Michigan Chemical Corporation is your dependable source of supply for this and other intermediates. TMCB is available promptly in small quantities for experiment purposes, in 700-pound nonreturnable drums, and in 50,000 pound tank-car lots.

*For further information, samples or prices, write or phone us.*



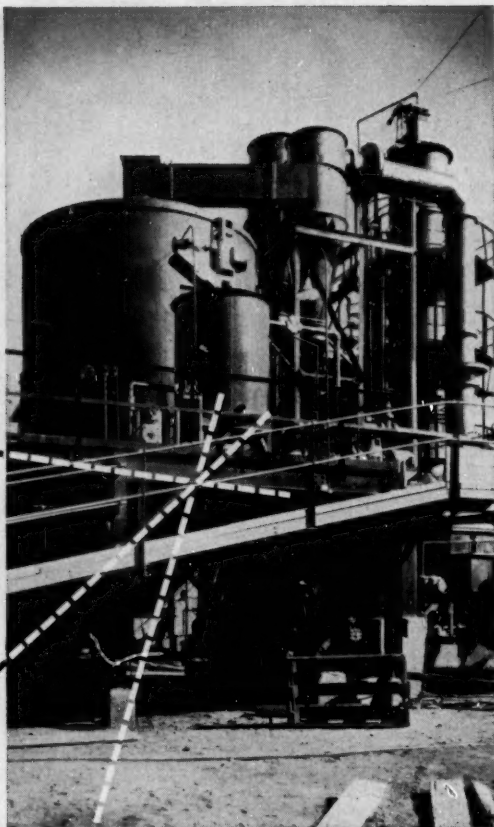
C-56-1  
\*Trademark

**MICHIGAN CHEMICAL CORPORATION**  
519 Bankson Street  
SAINT LOUIS, MICHIGAN

**IN  
SOUTH  
AFRICA**

**AROUND  
THE  
CLOCK**

**A  
TANK CAR  
AN HOUR  
OF  $H_2SO_4$**



This FluoSolids System at West Rand Consolidated Gold Mines, Ltd. on South Africa's fabulous Witwatersrand was started up early in 1952. The first of several to go into operation on the Rand, it was also the first in the world to combine FluoSolids roasting of pyrite with a contact acid plant.

Over 1650 tons of  $H_2SO_4$  — enough to fill twenty-four tank cars — are being produced every day for uranium leaching at seven South African mills.

An important part of each of these installations is a Dorco FluoSolids System. Cumulatively the Systems include nineteen Reactors, of which sixteen were on original order and three on repeat orders, plus additional Dorco-Oliver and auxiliary equipment to produce a high strength  $SO_2$  gas for acid manufacture by conventional contact acid plants.

Total feed to the Systems is 1450 tons per day of pyritic gold mill tailings — averaging 35 to 45% total sulfur, gas production is 75,000 to 82,000 SCFM. Gas strength averages 12 to 13%  $SO_2$  . . . sulfur recovery approximately 90%.

The efficiency and economics of the Dorco FluoSolids System is in evidence in these facts. Additional representative proof that the FluoSolids process can produce an  $SO_2$  gas at lower investment and operating costs than other roasters.

If there's a step in your flowsheet where intimate contact between solids and gases is essential, fluidization should be investigated. Just drop a line to Dorco-Oliver Incorporated, Stamford, Connecticut.

FluoSolids is a Trade Mark of Dorco-Oliver Incorporated, Reg. U. S. Pat. Off.



**DORR-OLIVER**  
INCORPORATED  
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT  
STAMFORD • CONNECTICUT • U. S. A.

**C W Report**

## PROCESSING

Extraction of colloids from seaweed is a far less primitive proposition than gathering the latter. Standard chemical process techniques are commonly used by all U.S. processors.

Phycocolloid producer firms are constantly revamping their processing methods to achieve better yields and greater uniformity of product.

Processes now in use are detailed in the table on p. 66.

## MARKETING

Seaweed colloids find their chief uses as thickeners and gelling agents. This by no means implies the interchange of one extract for another. Each phycocolloid possesses unique physical and chemical properties that suggest specific applications. Often, combinations of the extracts give better end results than using one alone.

In food uses, seaweed colloids act as thickening, suspending, stabilizing, emulsifying, gelling agents, and film formers, without inhibiting or masking flavor. All phycocolloids are compatible with foods under most conditions.

Often they act as "protective" colloids because they thwart the agglomeration and settling of finely divided particles or precipitates.

Algins and carrageenins win out in food uses over agar (which excels for bacteriological purposes). General ranges of concentration of seaweed colloids in foods are from 0.1 to 2.0% based on total finished product.

Combinations with other colloids—e.g., starch, locust bean gum, and carboxymethyl cellulose—are not uncommon to obtain special desired effects.

One of the biggest end-uses of algin and carrageenins is to stabilize ice cream. Here they prevent "wheying-off" of ice cream mixes, control ice crystal formation, promote smooth melting and, in general, improve overall texture.



1...2... 3... GO!

# TRIMETHYLOLPROPANE

another new aldol product from Celanese

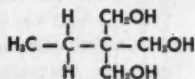
- 1 In continuous large volume . . .
- 2 With exceptionally high purity . . .
- 3 At a new low cost . . .

For all producers of polyurethanes and alkyd resins, Celanese expanded production of trimethylolpropane—in the right volume, quality, and at a new low price—is important news.

No longer will it be necessary to pass up the processing and product improvements this polyol can contribute. Now manufacturers can take full advantage of the better adhesion, color, color retention, and hardness it provides in alkyd-based baking enamels . . . the greater mixing ease it offers in compounding polyesters and pre-polymers with diisocyanates.

The way is also clear now for the commercial development of other indicated uses for trimethylolpropane—in the production of synthetic drying oils, plasticizers, surface active agents, polyesters. For working samples and prices write to Celanese Corporation of America, Chemical Division, Dept. 652-G, 180 Madison Ave., N. Y. 16.

## CELANESE® TRIMETHYLOLPROPANE



### Descriptive Data

Hydroxyl value, % by wt., min.	.37.5
Water content, % by wt., max.	0.05
Color (10% soln.), APHA, max.	5
Phthalic color, Gardner, max.	1
Acidity, as formic, % by wt., max.	0.002

Q. Why can Celanese produce trimethylolpropane at a price well below that of comparable purity grades?

A. Through the production efficiencies and economies of expanded aldol capacity . . . special Celanese-developed processes . . . and a basic position in aldehydes.

Trimethylolpropane is the second in a new series of aldol developments and will be followed by several others—new polyols, glycols and aldehydes. Celanese® 3-Methoxy Butanol, first in the series, is already being produced in large quantities.

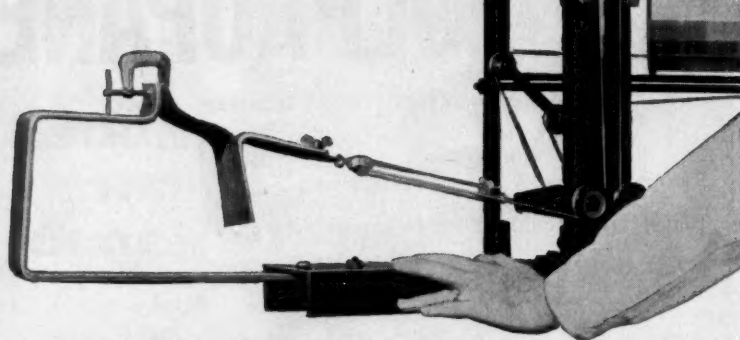
**Celanese**  
CHEMICALS

\*Reg. U. S. Pat. Off.

*This industry needs  
properties only*

## PHENOLIC RESINS

*can provide*



### YOURS, TOO ?

This familiar test points up one of the numerous applications that are best served by Durez phenolic resins.

Here, used as a modifier in nitrile rubber or Neoprene solvent cements, the resin serves to strengthen the film. Further, it aids in control of solvent release to produce specific degrees of tack.

For a long time we have been serving industry by developing and manufacturing phenolic resins for many and diverse requirements. Having physical, chemical, electrical, and thermal prop-

erties in excellent balance, Durez makes products serve better and sell better. It may simplify a process or reduce production costs, or both.

In your business, Durez resins may have profitable applications as yet unsuspected—may help to solve a problem you face this minute. We'll gladly aid you in your research for the products of tomorrow with our broad knowledge of phenolics. As a starter, let us send you a copy of our booklet, "Durez Resins for Industry".

#### CAN YOU USE THESE PROPERTIES ?

<b>Electrical Resistance</b>	Dielectric strength up to 600 volts per mil and power factor of 2.2%.
<b>Chemical Resistance</b>	Insoluble in acids, mild alkalies, and all organic solvents.
<b>Heat Resistance</b>	Up to 450°F. continuous and 700°F. intermittent with no carbonization.
<b>Mechanical Strength</b>	Transverse (flex.) 11,000 lbs. p.s.i. Impact (Izod) .22 to .25 ft.-lb./in. Tensile 5-6,000 lbs. p.s.i.
<b>Water Resistance</b>	Impervious to hot and cold water...forming completely water-resistant glue lines.



*Phenolic Resins that fit the job*

**DUREZ PLASTICS DIVISION**

**HOOKEE ELECTROCHEMICAL COMPANY**

**907 Walck Road, North Tonawanda, N. Y.**

Export Agent: Omni Products Corp., 460 Fourth Avenue, New York 16, New York

**HOOKEE**  
CHEMICALS  
PLASTICS

Carrageenin has received almost overwhelming acceptance as a chocolate milk stabilizer. One pound of Irish moss extract in 1,650 quarts of chocolate milk produces permanent suspension of cocoa fibers. Carrageenin's reactivity with milk proteins extends as well to soya and egg proteins.

Carrageenin's effectiveness in stabilizing oil emulsions appears to be based on its ability to form mechanically stable structures at oil-water interfaces.

Because algin is readily soluble in aqueous media, it finds wide use in dry blended mixes—puddings, meringues, icings, and dessert gels.

Bakery icing stabilizers are improved by addition of algin and agar which prevent stickiness. Except where gel strength is mandatory, Irish moss extracts are largely replacing agar in baked goods. In addition, carrageenin is sold as a thickener for pie fillings, and as a gelling agent in starch-base milk puddings.

In the canning industries, agar or Irish moss extracts often are used to prevent products from becoming "mushy" in transit. Their high melting points give the phycocolloids an edge over other colloid materials in such applications.

Admittedly, in certain food fields, nonseaweed materials are traditionally dominant. Pectin reigns supreme in household-jelly manufacture. Gelatin is the prime gelling agent for most clear desserts and marshmallows. CMC and methyl cellulose are widely used in dietetic bulk foods and laxatives. Starches control the pudding market, and casein-phosphate predominates in the instant-pudding field. But Irish moss products and algin are dominant in stabilizing ice creams and chocolate milk.

Agar's indigestibility, combined with its thickening power, has resulted in its widespread use as roughage in medicinals, breakfast foods, and specialty bakery products where indigestibility is no handicap and, indeed, desired. Its use as a bacteriological medium is unchallenged. Carrageenin, on the other hand, is most widely used as a stabilizer in laxative emulsions.

Algins and carrageenins are being applied as thickening agents in cosmetic and medicinal creams for their emollient and demulcent effect.

THE **HUMKO** CO.  
CHEMICAL DIVISION

MANUFACTURERS OF  
HYSTRENE  
AND OTHER  
FATTY ACIDS

(FORMERLY TRENDIX DIVISION)  
P. O. BOX 4607  
MEMPHIS 7, TENN.

April 17, 1956

OFFICE  
1702 N. THOMAS ST.  
PHONE JACKSON 9-8889

Mr. K. McCubbin, Vice President  
Blaw-Knox Company  
Chemical Plants Division  
180 N. Wabash Avenue  
Chicago 1, Illinois

Dear Mr. McCubbin:

During one of our discussions last week, you asked me why HumKo's Chemical Division had enjoyed such successful growth during the past few years. Realizing the importance of your question, I have decided to comment in greater detail.

Our growth is undoubtedly the result of many factors: An excellent raw material position due to HumKo's edible oil refining operations; an understanding of the customer, his problems and requirements; an intelligent, consistent and aggressive sales and sales service program; a realistic delivery schedule; honest pricing and straightforward business relations.

However, the foundation on which all of the above rests is our line of uniformly high purity **HYSTRENE** fatty acids produced by a patented process, and tailored to meet the specific requirements of our customers.

We believe there is no substitute for this high quality, and that it can be obtained only through good planning, careful operation, continuous research, and the use of well designed, well constructed equipment. In this latter connection, it is because of your organization's experience in this field that we awarded you the contract for our second distillation unit. Our Research has developed new products which require this additional equipment, in order to further expand our line of **HYSTRENE** and **INDUSTRENE** products. We know that we will enjoy the same cooperation in working with you on this installation that we did on our first distillation unit.

Yours very truly,

The HumKo Company

*W. J. O'Connell*  
W. J. O'Connell  
Vice President

First unit designed and installed in 1954 for the HumKo Company

## a second Blaw-Knox fatty acid distillation unit for HumKo

This new still for Humko, a quarter-century leader in the fats and oils field, will be built with two major modifications. A unique radiant fired furnace, developed by Blaw-Knox, will provide maximum temperature control with savings in fuel and maintenance. This marks the first time a furnace of this type has been used in the fatty

acids industry. A stainless steel vessel with this superior furnace will provide the additional advantages of better heat transfer and elimination of corrosion problems.

We'd like to help *you* plan better facilities for fats and oil extraction, fractionation, distillation and refining.



### BLAW-KNOX COMPANY CHEMICAL PLANTS DIVISION

Chicago 1, Illinois / Pittsburgh 30, Pennsylvania

Birmingham • New York • Philadelphia • San Francisco • Washington, D. C.

Only a few  
still have

# Antique Ideas

about

## petrolatums

Progressive formulators of a wide variety of products find in Penn-Drake Petrolatums many useful characteristics. There was a time when petrolatums were considered suitable materials *only* for drug and cosmetic products. But now they are advantageously used in hundreds of diverse products. Some are listed below:

## PENN-DRAKE petrolatums

provide these  
desirable properties:

- UNCTUOUS
- ODOR-FREE, TASTE-FREE
- RESISTANT TO OXIDATION,  
LIGHT AND HEAT
- SPECIAL VISCOSITIES,  
MELTING POINTS, COLORS

### FOR USE IN APPLICATIONS SUCH AS THESE:

- Saturants
- Lubricants for food  
and confectionery  
processing
- Plasticizers
- Detackifiers
- Water repellents
- Softeners
- Rust preventives
- Textile specialties

Write for detailed specifications or consult  
the Penn-Drake Technical Service



**PENNSYLVANIA REFINING COMPANY**

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C W Report

## RESEARCH

Encouraged by the rapid growth of their industry, seaweed colloid producers in the U.S. are staunchly fostering product research and focusing attention on promising market developments—especially industrial uses—here and abroad.

One of these, in England, is particularly significant. There, textile fibers are being made from algin. Algin fabrics wear well, find use in various fire-resistant applications. Harsh hand, however, seems to be the biggest drawback to wider consumption.

Another British use for alginate fiber: as an alkali-soluble supporting thread for making extremely fine wools and cottons.

Here in the U.S., algin is catching on as paper and gloss ink sizings and as corrugating adhesives for paper. Both of these developments, the industry believes, are important to future growth.

Worth keeping in mind, too, are these potential applications:

- Alginate stearate as a photographic film former.
- Alginic acid hydrolyzate and fatty acid condensation products as emulsifiers capable of forming extremely stable emulsions.
- Calcium alginate food casing as a cheaper and more stable product than animal-based casings. Visking Corp. is already commercially evaluating this use.
- Propylene glycol alginates as gel formers in acidic solutions.
- Alginate jellies as a storage medium for preserving frozen foods over long periods with little quality change. A/S Protan (Norway) has successfully so-applied alginates to fish preservation.
- Carrageenin "carriers" for antibiotics. American Cyanamid has already perfected such an application of carrageenin for chlortetracycline.
- Laminarin (from brown seaweed indigenous to British and Scandinavian

# NEW PRODUCT DIRECTIONS

## CHEMICAL PROPERTIES

**CYANURIC ACID**

## PHYSICAL PROPERTIES

Appearance	White Solid
Molecular Weight (theory)	129.08
Melting Point	Infusible
Dissociation Constants	
$K_a$ at 25° C	
First	$6.31 \times 10^{-8}$
Second	$7.94 \times 10^{-12}$
Solubility	Water at 20° C: 2.5 g./l. Moderately soluble in hot water. Soluble in concentrated sulfuric acid and alkali. Insoluble in most organic solvents.

\*Melamine and Cyanuric Chloride are also available from American Cyanamid Company.

## in research today...in commerce tomorrow? CYANAMID'S CYANURIC ACID

Cyanuric acid, a potentially useful s-triazine derivative, is now being offered in research quantities for your evaluation.

Cyanuric acid gives salts with most inorganic cations and with organic bases such as guanidine and many alkaloids. Highly colored salts are formed with metallic ions in the presence of ammonia. Note also the reactions outlined above, with ammonia, phosphorus pentachloride, methyl iodide, acetyl chloride, diazomethane and sodium hypochlorite.

Cyanuric acid is reported to be very toxic to certain types of barley and to the garden radish; this herbicidal action may be selective. It can be used in the preparation of trichloroisocyanuric acid, a solid bleaching agent.

Production of resins from formaldehyde and cyanuric acid with a metal salt or ligninsulfonic acid are claimed. Ammoniacal solutions have been used in microanalysis to determine traces of various cations colorimetrically.

Use in preparing dyestuffs, possibly through reaction with substituted diazonium salts, is suggested.

For your further evaluation, we will be glad to send a Technical Data Sheet and sample.

CYANAMID

AMERICAN CYANAMID COMPANY  
30 Rockefeller Plaza, New York 20, N. Y.

Please send me

☐ Technical Data Sheet on Cyanuric Acid  
☐ Sample of Cyanuric Acid

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COMPANY \_\_\_\_\_

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New Fatty  
Alcohol

light color

low  
cloud point

low viscosity

ADM's

ADOL

32

9:10 OCTADECENOL—OLEYL



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tilled Fatty Acids and  
Stearic Acid . . . Hydro-  
genated Vegetable,  
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low . . . Hydrogenated  
Castor Oil . . . Stearyl,  
Cetyl, Oleyl Alcohol . . .  
Sperm Oils and Sper-  
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... Erucic Acid . . .  
Hydroxystearic Acid.

Chemifats  
that put **SELL**  
into your  
products



Want to test a high-quality liquid fatty alcohol with excellent color stability, low viscosity, and high chemical reactivity? Write ADM for a sample of ADOL 32, a straight chain unsaturated monohydric alcohol, essentially oleyl. Chemical reactive groups include one double bond and one hydroxyl group. This material is non-corrosive and soluble in a wide variety of solvents.

These characteristics make ADOL 32 ideal as an emollient, a super-fatting agent, and a compound for detergents. Other possible applications—chemical intermediates, surfactants, soaps, germicides, emulsifiers, resins, plasticizers, textiles, lubricating oil additives, cutting oil bases and sulfonates.

ADOL 32, as well as thirty new fatty alcohols (many never before available), is being produced at ADM's new Ashtabula, Ohio, plant. Warehouse stocks are being maintained for immediate shipment in drums or tank cars. Be sure to keep posted by writing for our latest Chemical Reactions Bulletin No. 907R and Specifications Bulletin No. 908A.

Archer·Daniels·Midland company

CHEMICAL PRODUCTS DIVISION

2191 WEST 110th STREET • CLEVELAND 2, OHIO

waters) as a synthesis base for glucose and desoxyribose in producing a soluble surgical dusting powder. Laminarin sulfate as a blood clotting agent. These are British developments but could apply here.

- Alginates as flocculents for industrial slimes. Uranium ore producers are interested in seaweed colloids from this viewpoint.

- Other extracted chemicals (besides algin, carrageenin, and agar) from seaweed. So far, mannitol, laminarin, fucoidin, and fucosterol have been garnered in semi-commercial quantities. Mannitol extraction holds most promise. Reason: mannitol may be produced from seaweed at almost one-third the cost of making synthetic mannitol. Established markets for this chemical already exist in explosives, in the electrical industry, in paint making, and in the pharmaceutical industry.

## PERSPECTIVE

So far, the production curve of seaweed colloids shows steady annual increases with no signs of leveling. Probably the industry's greatest tussle at the moment is meeting demand.

This unprecedented demand has thrust the raw-material problem into the foreground. Accurate distribution maps of marine plant resources are prerequisites for future growth. The First and Second International Symposia at Edinburgh and Trondheim have contributed notably.

More efficient collection of seaweed from known sources is also of primary importance. Research is delving deeper into the chemistry and behavior of algin, agar and carrageenin. New markets are developing for these products, which leads many to believe that future markets for seaweed colloids will dwarf present ones.

## REPRINTS AVAILABLE

Copies of this report are available from Chemical Week, Reprint Dept., 330 W. 42nd St., New York 36, N. Y., at 50¢ each.

Prices for bulk quantities (over 10 copies) and for previous CW Reports are available upon request.

when **Cost-Saving** is important  
in handling dry materials in bulk

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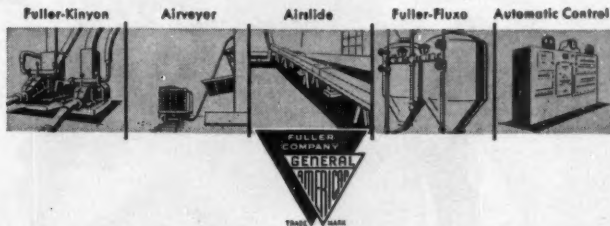
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... pioneers in harnessing AIR

You know, and your accountants know, that obsolescence is one of the greatest enemies of profits. The non-productive, although essential, function of materials handling can become less expensive when you install a Fuller-engineered conveying system to transport dry pulverized or granular materials in bulk, safely, efficiently and under completely sanitary conditions.

The right combination of Fuller-Kinyon, Airveyor, Airslide and Fuller-Fluxo systems installed in your plant can bring your materials handling costs down through savings in time, improved labor relations, reduced material losses and improved plant safety.

First step toward a more profitable future: Write for Fuller's informative brochure, "How to Pull Dollars Out of Thin Air." See photos of Fuller equipment on the job. Do it today.



**Fuller**

pioneers in harnessing AIR

1949  
G-119

**FULLER COMPANY, 144 Bridge St., Catasauqua, Penna.**

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*Ethyl Acetate*

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*Butadiene*

*Refined Fusel Oil*



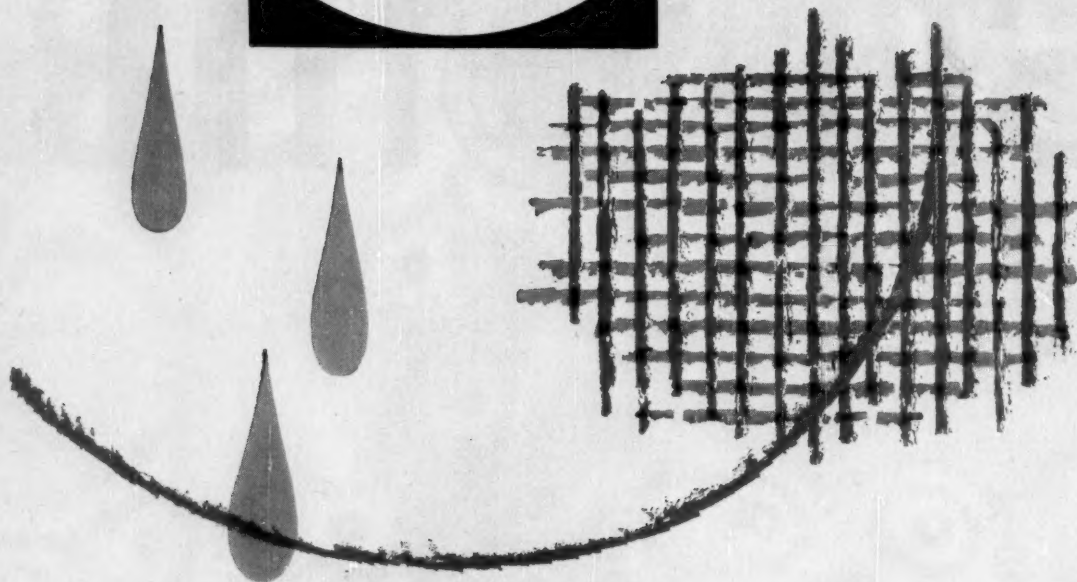
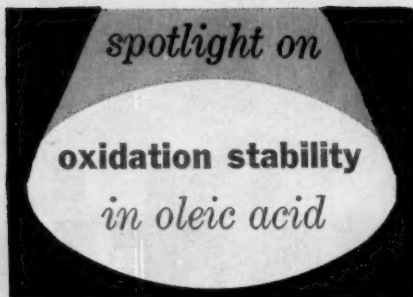
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*how Emersol Elaine  
eliminated uneven dyeing fault  
of a fiber lubricant*

If you have a problem involving a "breakdown" or "change" in your products induced by aging or oxidation, then this customer experience will be of interest: *Case History No. 27-31 . . . The difficulties of uneven dyeing of yarns and fabrics in a textile mill precipitated a thorough investigation of all variables. The trouble was traced to this manufacturer's fiber lubricant which oxidized on the yarns. This led to only partial "oil" removal in scouring, which left sufficient residue to prevent uniform penetration of the dye.*

*Since oleic acid was a constituent in this manufacturer's lubricant, a study of oxidation stabilities of double-distilled oleic acids from different producers was undertaken. Laboratory results showed that Emersol 221 White Elaine exhibited superior oxidation stability,*

*and when substituted in his regular production, eliminated all previous dyeing difficulties.*

This experience serves only as an example of the benefits derived from the outstanding oxidation stability of Emersol Oleic Acids. When this is added to their excellent color stability and resistance to rancidity, you get an unmatched combination that will make your products better, more appealing, and stay that way longer . . . and all at no extra cost. So, if you are not already benefiting from the Emersol Elaines, buy your next, and all oleic acid requirements from Emery.

Write Dept. I-7 for 20 page brochure titled "Emersol Oleic Acids."



**Fatty Acids & Derivatives  
Plastolein Plasticizers  
Twitchell Oils, Emulsifiers**

**Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio**

*New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland; Ecclestone Chemical Co., Detroit*

*Warehouse stocks also in St. Louis, Buffalo, Baltimore, and Los Angeles*

*Export: Carew Tower, Cincinnati 2, Ohio*

# Technology Newsletter

CHEMICAL WEEK  
July 21, 1956

Ionization radiation for sterilizing sewage will get a tryout at the Armour Research Foundation. Heat (supplied by steam) is the sterilizing agent used now. The Army Chemical Corps is sponsoring the Armour Research investigations.

A new theory on osteo-arthritis may herald important advances against the disease. Esther Tuttle, a New York physician, told the British Commonwealth Medical Congress that osteo-arthritis is not simple wear and tear on the joint, as has long been thought. Rather, she said, it's brought about by an impaired mechanism that upsets the normal equilibrium within the body cell. It starts with a deficiency of oxygen in the cell, then goes on to destroy the cell.

Dr. Tuttle bases her conclusions on a study of over 4,000 patients. She feels that 90% of the time, the disease can be predicted far enough in advance to permit its prevention.

The talk in England was the first revelation of results of her 25-year research study.

And a statistical study of arthritis victims shows that it's an occupational hazard for farmers. Just about 23% of the country's farmers have arthritis, says the Arthritis and Rheumatism Foundation.

Medical people are at a loss to explain the results. But they theorize that exposure to the elements, hard physical labor without let-up and lack of relaxation may be contributing factors.

Here's a neat way to make plastic sheets: Swedloe Plastic (Los Angeles) outlines a process in a recent patent (U.S.P. 2,750,320). The liquid monomer is mixed with the catalyst; the mix is sent through two translucent sheets which form a hollow, continuous, moving belt. Ultraviolet light is used to polymerize the compounds in sheet form.

Without experimental data, it's hard to gauge commercial possibilities of the process. But if it proves commercially feasible, the process will be a real step-saver.

Australia's \$24-million Morwell gas project (CW, Jan. 21, p. 64) to exploit vast lignite deposits via the Lurgi process is virtually complete, and the plant is running low-pressure tests. The 103-mile pipeline to Melbourne is nearing completion.

Actual operations, however, won't begin until October. Initially, the plant will produce town gas and 300,000 imp. gals./year of 85-octane gasoline as by-product. But, according to present plans, synthetic gasoline will be the prime product by 1960, with output eventually reaching 60 million imp. gals./year.

Fluidized-bed processing in the textile field? The British Rayon Research Assn., near Manchester, is experimenting with the process. The idea

# Technology

## Newsletter

(Continued)

is to heat a bed of sand electrically, making it "bubble" and otherwise assume fluid characteristics. Then, the cloth is passed through it. The principle can be adapted to drying, dyeing, baking resins or padding pigments.

The sand that remains on the cloth (said to be less than 1%) is removed with a roller. Although the work is still in an early stage it does indicate the possibility of increasing efficiency and a saving time.

•  
**Now they're blaming the atom bomb** for causing poor crops and fishing. French scientists are reasoning this way: the high heat of fission converts the nitrogen in air into oxides, which help form nitric acid. The nitric acid lowers the pH of the soil and streams.

•  
**A nitrogen mustard derivative of aminophenylalanine** has "cured" cancer in 10 out of 10 cases of laboratory-induced sarcoma in rats. That's the substance of a report of cancer pathologist Prof. Alexander Haddow to a recent meeting of the British Medical Assn. in Brighton, England. Haddow says the chemical is now being used in clinical trials on humans, but it's still too early to assess the results.

**The drug has also been looked at by American researchers** at New York's Sloan-Kettering Institute for Cancer Research. They tell *CW* it provides a "pretty good" response. Results, however, are apparently no better than those obtained with some of other experimental compounds—notably triethylene melamine (*CW*, July 24, '54, p. 74). But Sloan-Kettering is still trying the alanine mustard on different rat sarcoma varieties, is also trying the chemical on humans.

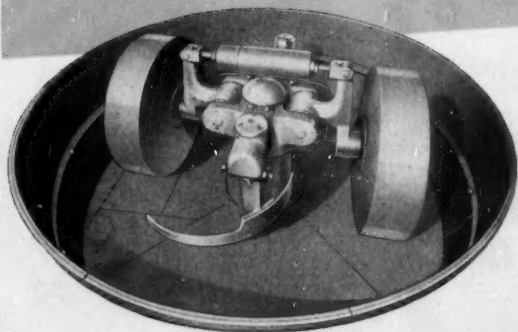
**Haddow thinks the real importance of the compound** is not therapeutic, but lies rather in its value as a guide to how nitrogen mustards affect living cells.

•  
**Score another gain for Standard Oil Co. of Indiana's** low-pressure polyethylene and polypropylene process. Spencer Chemical Co. (Kansas City, Mo.), the latest licensee, says it will "commence immediately to construct a facility to produce semicommercial quantities." Eastman Kodak was the first to license the process for a commercial tryout in a proposed Texas Eastman plant at Longview, Tex. (*CW Technology Newsletter*, June 23)

•  
**Shell Development's (Emeryville, Calif.)** new ethylene-oxide process will debut in the U.S. in an \$8-million, 60-million lbs./year plant to be built by Wyandotte on its recently purchased 700-acre site at Geismar, La. (near Baton Rouge). Construction, by Lummus Co. (New York), is expected to start next January.

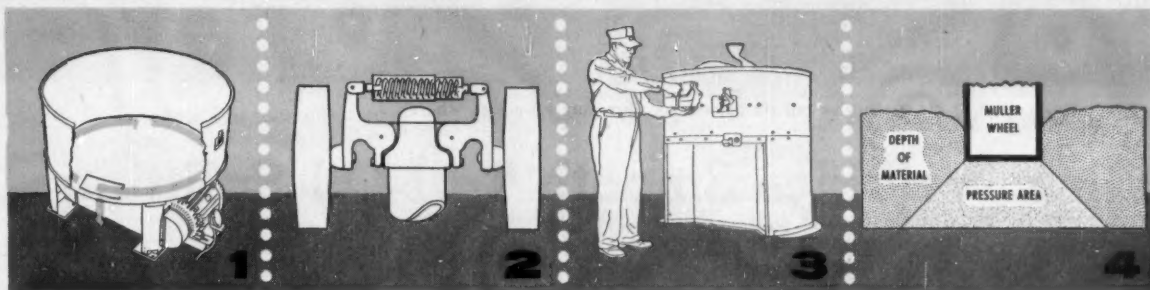
Lummus says it is also building a Shell-process plant in England—probably for Petrochemicals Ltd.

# Here's why **SIMPSON MIX-MULLER®** is today's **BEST BUY** in **MIXING EQUIPMENT**



Interior crib detail of Model 3F; 50 to 60 cu. ft. batch capacity Mix-Muller.

The advantage of preparing dry, wetted or plastic materials in a Simpson Mix-Muller is written in *savings*. Controlled mixing *cannot fail* to result in thorough, effective utilization of raw materials. Adequate control over moisture alone can mean the difference between an unwieldy reject ratio and a profitable mixing operation. Four outstanding features of the Simpson Mix-Muller play an important role in the kind of control over product quality so necessary to return profit from manpower, machinery and materials. See how they are designed to save you time, labor, material, power, maintenance and *money*:



## 1. BOTTOM DISCHARGE • STATIONARY PAN

Mix-Muller power is used to mix . . . none is wasted to move machinery or material mass. Muller and plow action clears pan quickly, thoroughly.

## 2. SPRING LOADED MULLERS

. . . allow muller pressure to be adjusted to the type and density of materials to be mixed. You reduce mulling time, build desired properties faster.

## 3. SAFE, EASY to OPERATE and MAINTAIN

You get large batches prepared in minutes. Design is simple, rugged. *Intense*, but slow speed, action extends machinery wear life. Maintenance people welcome the self cleaning action.

## 4. MOST THOROUGH MULLING ACTION EVER DEVELOPED

Thorough dispersion affords high yield of even trace elements and optimum utilization of mixing properties. High muller pressure to area ratio (see chart) assures *most* mulling per revolution.



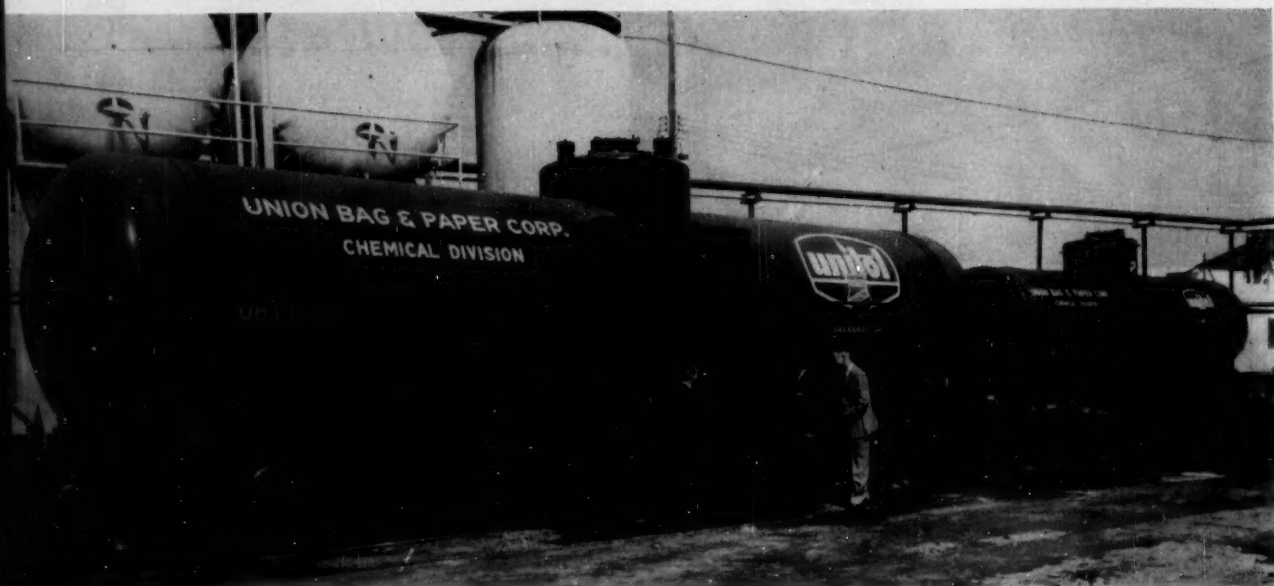
Model 2F; 30 to 40 cu. ft. Mix-Muller. Note unit drive—easy adaptability for dust hood or exhaust. It's built to be integrated into a materials handling or continuous mixing system!



**SIMPSON  
MIX-MULLER  
Division**

**NATIONAL  
Engineering Company**  
642 Machinery Hall Building  
Chicago 6, Illinois

# PRODUCTION



KING-SIZE TANK CAR shuttles tall oil between Union Bag refineries where . . .

## New Wrinkles Smooth Tall-Oil Splitting

**T**HOUGH war-born shortages of fatty acids provided the initial impetus for expansion of tall-oil production, chemical processing deserves the credit for making possible tall oil's record-breaking growth (*CW*, May 12, p. 104). Fractional distillation of crude tall oil, first used commercially in 1950, now plays a major role in the operations (either existing or planned) of seven leading producers. Latest to go onstream: Union Bag & Paper Corp.'s \$2.5-million, 1,500-2,000-tons/month distillation plant at Savannah, Ga. The plant teams conventional vacuum fractionation processes\* with several efficiency- and quality-boosting innovations.

A producer of crude and acid-refined tall oil since 1942, Union Bag spent 12 years studying various processes for separating the crude into high-quality fatty acids and rosin. In 1954, the company decided to add four new products—distilled tall oil, tall-oil rosin, tall-oil fatty acids, tall-oil pitch—to its Unitol line.

\*Union Bag and other producers have taken licenses to operate under patents on tall-oil distillation held by Armour & Co. (Chicago).

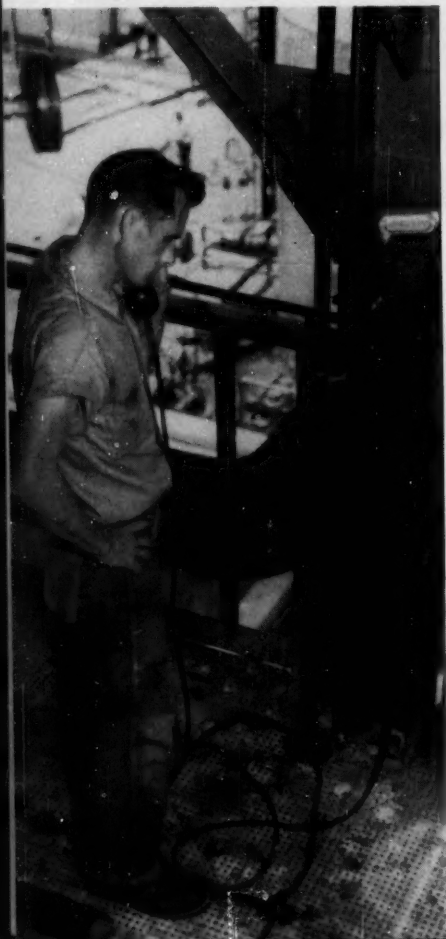
**PLUG-IN PHONES** allow direct contact with distant control room.

Early in '55, Foster Wheeler (New York) took on the job of engineering and building the distillation plant on a turnkey basis. Construction began in September '55 and ended with the successful start-up last April.

The trouble-free start-up (it took less than a month to attain calculated purity and quantities of products), says Union Bag, is a good example of what planning and follow-through can accomplish.

**Time- and Money-Savers:** In addition to its modern equipment and control instrumentation, the distillation plant incorporates many unique features designed to improve production efficiency and product quality. One example of design engineers' ingenuity is the king-size, 19,000-gal. tank car that shuttles crude tall oil from the acid-refining plant to the distillation unit. Switching the crude by tank car, says Union Bag, has proved more economical than installing a 4,000-ft.-long system of insulated and steam-traced pipe and intermittently pumping crude oil to storage.

Once the crude has been delivered to storage, the big problem is to minimize harmful color pickup, prevent stratification that would cause



variation in uniformity of the feed—and ultimately of the finished products. The latter is prevented by side-entering agitators that permit continuous blending of tank contents. To prevent color degradation, tanks are constructed of aluminum and blanketed with inert gas generated at the site by burning the oxygen out of air, drying the resultant gas to a low dew point. Also used for purging tank cars and trucks prior to loading, the generated gas costs only about  $\frac{1}{3}$  as much as  $\text{CO}_2$  in cylinders.

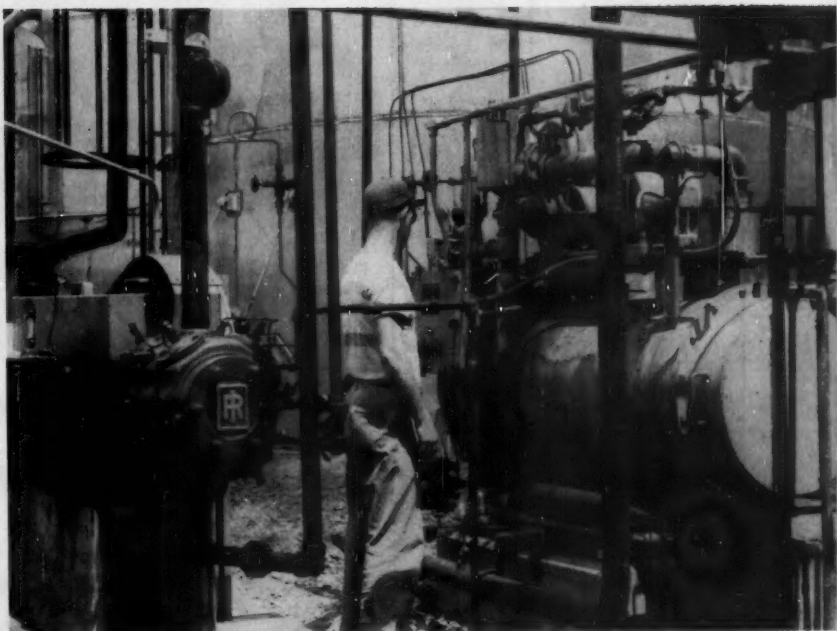
**Personnel Upgraded:** Another important factor in the smooth start up of the distillation plant was the training of operating personnel. For the initial operation, Union Bag selected four still men (three of them were chemical engineers), put them through an intensive familiarization course. Training included classroom studies, pipeline tracing and equipment testing on the site until each operator knew the location and function of every component in the system.

To facilitate control of the distillation equipment, all major instruments and controls are conveniently grouped in a central location. In addition, a plug-in telephone system permits easy communication between the still man in the control room and his helper outside. Helpers carry sound-powered phones that plug into jacks conveniently located at each level of the tower structure and at other important locations in the area.

**Dual Operation:** With the start-up of its distillation plant, Union Bag is currently in a position to offer both distilled and acid-refined product lines. And the operations and special problems in the two plants differ in as many ways as do the products.

The acid refinery utilizes batch processes, treats crude tall oil with strong sulfuric acid. Acid processing effects removal of coloring material and odor bodies, simultaneously causes dimerization of the rosin component to a stable liquid form, thereby preventing crystallization. Chief problem in the acid plant is corrosion by sulfuric acid at concentrations of 1 to 93%, temperatures to 200 F.

In the distillation plant, on the other hand, operation is continuous, designed to bring about a maximum degree of separation between rosin and fatty acids. The major problems



**GAS GENERATORS** on site supply inert blanket to safeguard tall-oil purity.

**PLANNERS\* AIM HIGH**, see growing market for better tall-oil derivatives.



here: critical control of product purity, corrosion by fatty and rosin acids at the high temperatures required for the distillation process.

**Market for Quality:** Though there's a big demand for tall-oil rosin (for paper size, coating resins, etc.), tall-oil fatty acids require selling. With

fatty acids from other sources no longer in short supply, the tall-oil products face stiff competition. Their one big advantage: low selling price ( $7\frac{1}{2}$ -8¢/lb. in tank cars, f.o.b. plant).

Consumers are looking for products with better color, better odor and particularly for fatty acids with less unsaponifiable content, says Union Bag. And that's what it feels the new distillation plant will give them.

\*l. to r., technical director Malcolm Taylor, by-product lab superintendent Ellis Barnes, chemical sales director Ben Doran, by-product plant superintendent William Ralls.

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## PRODUCTION

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## Plant's Three-Way War on Dermatitis

Twenty years ago, it was a rare day that Cyanamid's Bound Brook, N.J., plant didn't have three or four cases of severe skin rash. But today, it has been over six years since the plant has had a lost-time case of dermatitis.

The dermatitis problem at Bound

Brook wasn't easy to solve. The plant's chief products—organic intermediates, pigments, dyestuffs, rubber chemicals and pharmaceuticals—include numerous irritants. Some, like ASC (acetyl-sulfaniloyl chloride) and DNCB (dinitro-chlorobenzene), are notorious skin



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**PRODUCTION**

sensitizers. But the program established under the direction of Cyanamid's assistant medical director, Arthur Mangelsdorff, has proved equal to the task.

**Educate Personnel:** Personal cleanliness, says Dr. Mangelsdorff, is the greatest single weapon against occupational dermatitis. This factor is brought home to all Bound Brook personnel—especially new employees—by an educational program conducted by department supervisors.

Prevention is the thing, says Mangelsdorff, who points out that the battle can largely be won by designing chemical processes to prevent employee exposure to irritating gases, mists, dusts and fumes.

To this end, all new Bound Brook production facilities and changes in existing processes are carefully reviewed while they are in the blueprint stage. Industrial hygiene, safety, engineering and other departments study plans as a team, design and install environmental control measures before production begins.

Thereafter, supervisors check constantly to see that dust collection systems, other safety equipment are functioning properly; that employees wear protective clothing and that they shower (on company time) after each shift.

**Soap and Water:** One of Cyanamid's chief defense batteries is the plant laundry. Largest in the county, it puts 250,000 pounds of work clothing—underwear, coveralls and towels—through the wringer every month.

The work clothing is supplied by the plant—two sets per man for each member of the production force. As each man comes off the job, he drops his dirty clothing into a hopper, picks up the clean set he left the day before. Next he takes soap and towel and heads for the showers.

Dirty clothes are immediately washed, dried and sterilized at 200 F. On hand are two full-time seamstresses who mend rips and tears, however slight, that might allow irritants to enter.

Once in a while, despite all precautions, an employee does break out in a rash (which may not be occupational). First step in the treatment is local cleansing with warm water and mild white soap. Says Mangelsdorff: "We always use the gentlest treatment—stronger medication may only aggravate the condition."

As a matter of routine, every employee who reports skin irritation is temporarily moved to another job. A report made out in triplicate indicates where the man is not to work. When the dermatitis is entirely cleared up, he's usually returned to his original job.

If the irritation is verified as resulting from on-the-job contact (poison ivy, other off-job contacts are often at fault), the industrial hygienist and safety department immediately investigate the trouble spot, correct responsible conditions.

Sometimes it requires a lot of careful and constant observation to locate the source of irritant. A typical example cropped up when the sulfa drugs first went into mass production at Bound Brook.

One step involved screening ASC (a sulfadiazine intermediate) to remove lumps. Despite the use of seemingly adequate protective gloves and gauntlets, men on the screening job broke out in skin rashes. To solve that problem, Cyanamid had to come up with an automatic dryer that eliminated lumping and the need for contact with ASC.

**Prevention Pays Off:** Cyanamid's program points up growing realization among process industry leaders that a good industrial health program benefits both employees and management. The company's low insurance rates and low compensation payments are other fruits of preventive measures at Bound Brook.

**EQUIPMENT**

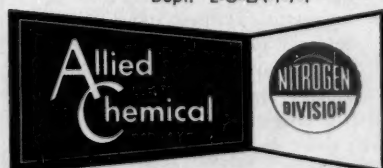
**Roller-Tube Pump:** A new positive displacement pump that kneads viscous fluids, slurries and gases forward is now available from Becher Pump Co. (Chicago) for metering and other small-volume requirements. Based on an old principle (*CW*, Sept. 24, '55, p. 70), the pump features a nylon roller that revolves in a planetary motion within a circular vinyl or Tygon frame, progressively kneads a plastic tube, which is between the frame and an outer aluminum housing. This action forces the fluid or gas through the tube. Because the material being pumped contacts only the plastic tube and fittings, the unit may be made of any resilient plastic that is chemically resistant to the fluid. The pump is designated as Model 40; Model 40MP



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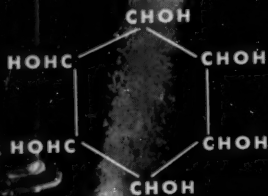


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## PRODUCTION

includes a fan-cooled motor. Top capacity of 19 oz./minute of water at a 10-ft. head requires 1/25 hp. motor operating at 1,500 rpm.

**Scanning Spectrometer:** A new grating-type scanning spectrometer is made by Jarrell-Ash Co. (Newtonville, Mass.). Called Model 8200 JAcob-Ebert 0.5 meter scanning spectrometer, it gives a first-order reciprocal linear dispersion of 16 angstroms/mm. at the exit slit, with a minimum resolution of 0.2 angstroms. The unit is said to be easily adapted for use as a flame spectrometer capable of detecting impurities to one part per billion. Electronic systems may be selected for direct recording of spectral intensities or for absorption studies. The unit is compact, measures 18 in. long, weighs 20 lbs.

**Drying Trays:** The Haveg Corp. (Wilmington, Del.) is out with a line

of drying trays said to provide excellent corrosion resistance to dyes, acids, and similar products. Low coefficient of heat transfer facilitates uniform crystal formation; crystals are easily removed from the tray surface. The trays come in various sizes, can be used at temperatures up to 300 F.

**High-Head Differential Meters:** High-pressure, high-velocity flows may be measured and transmitted pneumatically on a linear flow basis with Bailey Meter Co.'s (Cleveland, O.) new series of flow transmitters. The meters handle steam, water, other liquids, and gases producing maximum differentials from 100 to 1,200 in. of water. A mercury U-tube is available for maximum service pressures of 800, 3,500 and 6,000 psi., a bellows type is available for 1,500 and 3,500 psi. Signals are SAMA standard, 3-15 psi. or 3-27 psi. Receivers may indicate, record or integrate.



## Mobile Lab Rides Herd on Data

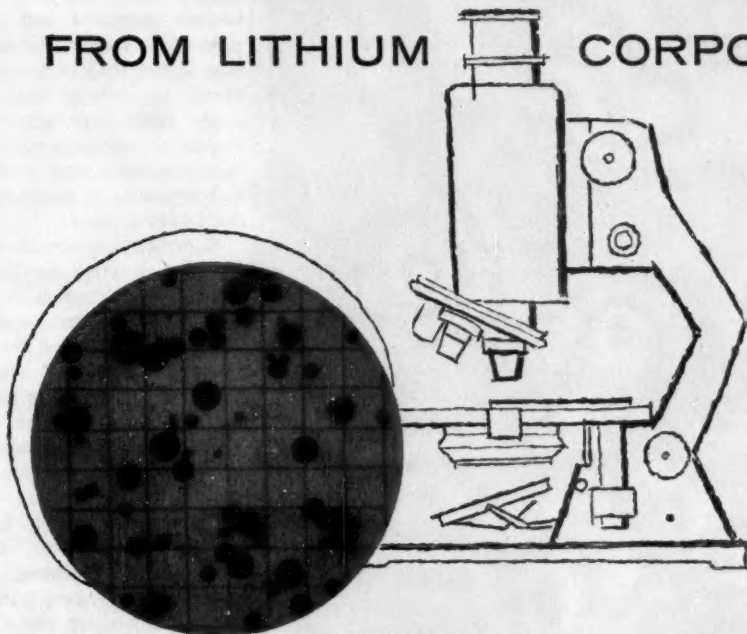
ROUNDING UP technical information on refinery and chemical plant processes and their control systems is faster and easier when you bring the test lab right to the job site. That's why Shell Development (Emeryville, Calif.) put its new trouble-shooting lab on

wheels. Jam-packed with sensitive instruments, interconnecting cables, and spares for everything from pipe fittings to electronic tubes, the new field test unit is amassing a library of data to be used for modifying existing plants, designing new control systems.

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# SPECIALTIES



CHEMICAL WAX REMOVAL: The often-neglected number. . .

EWING GALLOWAY

## One Step Before Waxing

Prewaxing floor treatments—to clean and remove old wax—have climbed slowly to the near \$4-million/year sales mark. Here's the story behind their growth.

Makers of floor-care products have almost waxed themselves into a corner. With commendable diligence, they've promoted the idea that it's easy to use their polishes. And they've found a willing listener to their story in the average U. S. housekeeper.

Trouble is, the consumer has become so accustomed to the "little work required" approach that she looks askance at anything that patently requires some real effort on her part.

One specialty that has suffered from this approach is the wax stripper.

Purpose of this type of product is to remove the polish resins that have become hardened and discolored—generally in corners and around moldings, rather than in heavily trafficked areas. To remove these deposits—shellac resins have been blamed often—a strong solvent is needed. In really bad cases, steel wool is required. But such treatment, to many, is a step they don't want to take.

Nonetheless, a considerable market for these materials has been built up in the past few years. Estimates are not very precise, but guesses put sales at the manufacturers' level at about \$3-4 million a year.\* The market is still growing, and more new products are being introduced. One of the newest: Fuld Bros. (Baltimore) Quick Strip, designed for private-label sales.

Now, the major share of the wax-stripper output is taken by industrial and institutional users. They're less concerned about saving labor if the results pay off. Many currently marketed products are not even offered as consumer shelf goods. But chances are that more consumer products will come into being as long as emulsion polishes that build up resin deposits are offered.

**Few for Wood:** Most of these removers are designed for use on linoleum and the asphalt, rubber and vinyl tile now so widely used as floor coverings. Because most are used in water solution, the strippers aren't suggested for wood floors, where they raise the grain unless the floor has been carefully sealed and varnished. One firm, now making a top-selling wax remover for composition floors, hopes to market a stripper for wood floors within a few months (a few such products are already available).

**Position Battle:** Relatively new and not particularly glamorous or suitable for heavy promotion, the wax strippers haven't yet gained a position as standard household chemicals.

Among the leading national sellers are E. L. Bruce's (Memphis, Tenn.) Wax Remover, which is sold to both industrial and home users; Murphy-Phoenix Co.'s (Cleveland) Rejuva Tile,

\*The Chemical Specialties Manufacturers Assn. covers these products in its survey of industrial-only floor treatment compounds. Last year's estimate was 5.5 million gals. (valued at \$10-15 million)—but this covers both general floor cleaners and wax removers. It's estimated that the removers make up about one-fifth of the total.

designed for home use; Schalk Chemical Co.'s (Los Angeles) Waxoff and Bixon Co.'s (New York) Thoro, both for home use.

In the industrial market, the big polish makers predominate—Johnson, Beacon, Simoniz, Franklin Research Co., to name a few. In addition, the firms supplying maintenance and janitor materials (made in their own plants or made for them) are important factors.

Both liquid and dry products are sold. Top sellers appear to be the liquid concentrates, which are added to hot water (about 4 ounces/2 gals. water). They sell for \$2-3/gal. to industrial users; liquids for home use are usually about \$1/quart.

Schalk's Waxoff is a dry-powder type of material that must be added to water. It is packaged in 3-oz. boxes (retailing for 15¢), each of which gives 1 gal. of solution.

**Formulation Factors:** Alkaline cleaners are generally used. The problem is to get a formulation strong enough to remove the material without leaving an alkaline residue that might saponify subsequent coats of wax (creating, in some cases, slippery floors). Moreover, alkalis can bleach some types of tile. For removing light wax deposits, ammonia in hot water is sufficient—but its odor makes it undesirable both in plants and in the home†. Trisodium phosphate is common in many formulations now, often in combination with sequestering agents, detergents, and suspending agents. Some feature amine soaps, too.

**Time and Trouble:** As they're formulated now, wax strippers are far more handily utilized by industry than by the householder. They must be applied, permitted to stand 5-10 minutes, mopped up or removed by a vacuum cleaner. The floor should be rinsed and mopped before the wax is put on. All this is a lot of bother for a householder accustomed to mop his floor, then apply a nonrub polish and let it dry to a gloss.

To exploit the full market potential for wax removers, some new approach to the problem of readying the surface seems greatly desirable. Right now, there seems to be no such solution at hand.

†Bell Telephone, one of the largest buyers of maintenance supplies, allows up to 1.5% free ammonia in wax removers it buys.



CITRUS PACKING: To quell rot and mold, a simple rinse.

## Packed to Last Longer

With a Dept. of Agriculture o.k. in its pocket and a raft of customers eager to buy, Dow Chemical has just launched its Dowcide A-Hexamine fungicide treatment for citrus fruits.

The process—washing the fruit in a dilute solution of the chemicals—has already proved a boon to Washington state apple growers (*CW*, July 10, 1954, p. 54); now, at the opposite corner of the U. S., Florida's growers are finding it a real help in preventing decay due to stem rot and blue mold.

The treatment, developed by Edwin Hopkins and Kenneth Loucks at Florida's Lake Alfred Experiment Station, first got the nod from U.S.D.A. last February. But only now is it coming into real favor with growers, packers.

Reasons for the product's success hark back to tests indicating that it can reduce decay from stem rot and blue mold by 85%, at the cost of less than 1¢ per bushel. And it allows consumers to store fruits longer with less fear of their rotting.

**Preventive Rinse:** The process is relatively simple for packers to utilize, entails a simple rinse in a solution of 2% Dowcide A (*o*-phenylphenate), 1% Hexamine (hexamethylene tetramine) and about ½% sodium hydroxide.

Added storage life of the fruit is particularly noticeable in cases where the fruit is shipped in bulk and then repacked—as is frequently the case of Florida fruit destined for repacking in New York.

Texas and California are trying modifications of the treatment, although in California stem rot doesn't exist. Citrus growers in these states as well as in Florida are looking to Dowcide A-Hexamine to increase efficiency and profits.

## Fair Trade Skirmish

**Fair Trade**, Schwegmann Bros. Supermarkets, and Louisiana law are in the news again. Last fortnight the Louisiana supreme court ruled that stores that do not sign price setting agreements are not bound by them. The provision in the law for this so-called "non-signer clause" is unconstitutional, the court declared.

This latest decision illustrates the present course of the anti-fair-traders' fight—tackle the state laws one by one. Schwegmann's more recent battles have been in federal courts. Now, he can safely cut prices in his home state, but chances are he'll keep sniping at the federal regulations.

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## SPECIALTIES



PAINT STUDY: Inside as well as out, Florida provides paint-test labs.

## Tough Climate for Best Test

The glaring sun, the high humidity, and, in many cases, salt air and salt spray make the climate of Florida a real paint-wrecker. The University of Florida's Engineering and Industrial Experiment Station, along with the Florida State Road Dept., has put these weathering conditions to good use. On exposed Indian Key (about 80 miles from Miami toward Key West), highway and steel maintenance paint is given a thorough testing.

Latest development coming from this rugged test program is a new primer formulation for steel. The state's specifications have been changed to cover a new pigment primer made with red lead and zinc yellow (corrosion inhibitors) and modified with iron oxide, magnesium silicate and mica. Advantage over plain red lead primers: superior durability at lower cost.

Now under way are a series of tests with other pigment combinations, as well as tests on recent developments in oils and resins. Epoxies and modified alkyd have shown up well as vehicles. Problem with these materials is insuring penetration of crevices (such as under rivet heads) to provide an effective seal.

**Broadening the Program:** With the new primer development to its credit, the University of Florida is expanding its paint research efforts in Gainesville. A new lab for paint research has been fitted up recently—indus-

trial coatings, in addition to corrosion resistant types, will be investigated.

Henry F. Payne (shown above with two of his students), formerly with American Cyanamid, heads the new program at the University. Payne, supported by the Southern Paint and Varnish Production Clubs, is trying to develop a course in paint technology. The clubs are offering six scholarships a year to induce students to study paints and coatings.

## PRODUCTS

**Enzyme for Burns:** Worth Pharmaceutical Corp. (Oak Lawn, Ill.) last week commercialized its B-N-G burn and dermatitis drug. The product, an aqueous extract of the mung bean sprout (an Asian legume), is suggested for sunburn, poison ivy, poison oak, and depends for action on a vegetable enzyme.

Stabilization of the vegetable enzyme is said to be the key to the development. Worth's President Ben Zarembo says it opens "tantalizing possibilities for new drugs, new solutions," and a portion of B-N-G profits will be channeled toward further enzyme research.

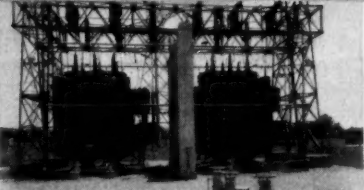





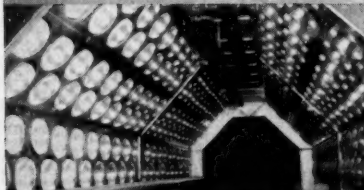

**Vinyl Special:** Bixon Chemical Corp. (Bronx, N.Y.) is introducing its Perfect Resin Floor Finish #800, a polish based on emulsifiable polyethylene

# How many of these **SPECIAL FIRE HAZARDS** does your plant contain?

Practically every manufacturer has what we call "special fire hazards" — extra hazardous areas in his plant where special protection must be provided to insure against possibly serious loss by fire. Some of these hazards are illustrated below, along with the special fire protection systems recommended to arrest fire without delay. And there are many other hazards, too, where major or minor supplements to ordinary-hazard fire protection systems

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Transformers	Propane tanks	
		<b>FOAM</b> Grinnell ProtectoFoam System
Bulk oil storage tanks	Flammable chemicals storage	
		<b>CARBON DIOXIDE</b> Grinnell CO <sub>2</sub> System
Engine test cells	Dip tanks	
		<b>DRY CHEMICALS</b> Grinnell Dry Chemical System
Infrared driers	Flammable liquid pumping stations	

Call in a Grinnell Fire Protection Engineer. With a full range of equipment, you are assured of unbiased recommendations which will be fitted to your requirements. Grinnell Company, Inc., 288 West Exchange St., Providence, R. I.

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## SPECIALTIES

(from Allied Chemical's Semet-Solvay Division). Sold under private labels and through jobbers, it is designed for industrial use. Bixon touts its value for vinyl tiles, hopes to work out tie-in deals soon with makers of this type of floor covering.

**All-Purpose Shiner:** Walton-March (Highland Park, Ill.) is introducing a silicone-containing polishing cloth tagged Most. It's suggested for use on wood, metal, glass, plastic, tile, leather. One cloth is said to treat more surface area than one quart of 18%-solids polish in liquid form. Walton-March will push the product for industrial and institutional use.

**Dairy Special:** McLaughlin Gormley King Co. (Minneapolis) is marketing a new repellent, MGK Repellent 11, for use in dairy barns to repel flies, mosquitoes, roaches. The new compound, a butadiene derivative patented by Phillips Petroleum Co., is said to be the first such repellent to receive Food & Drug Administration and U.S. Dept. of Agriculture okays for use on cattle and in barns.

**Two-Part Varnish:** For professional use, Canadian Industries Ltd.'s Paint Division has developed a new, two-component varnish for application to wood. A synthetic varnish, to which is added the catalyst-reducer, it is said to offer extra hardness and toughness.

**Snap-on Aerosol:** Builder's Sheet Metal Works, Inc. (New York) is now selling a filling outfit for use with standard-size aerosol containers. Included: a valve, "o" ring, and an empty container, as well as a pound can of propellant (such as refrigerator repairmen use), Hoke toggle valve and filling head plus fittings. Price: about \$22. It can be used to make refillable aerosols—for use in labs, or by the do-it-yourselfer.

**Basement Bargain:** Two new products suggested for interior concrete walls:

- **Cement Dus-Top**, made by Rotoo Corp. (Detroit, Mich.), is a sealer for all types of concrete surfaces. Said to be superior to sodium-silicate-based materials, Dus-Top is non-acid, non-toxic, is further claimed to cure concrete into a hard, non-slippery surface.

Rotoo recommends it as a pre-painting treatment.

- **Pittsburgh Paint** is now pushing a new, rubberized masonry paint called Cementhide. Made with a polyvinyl emulsion, the paint is claimed suitable for both interior and exterior surfaces, is available in up to 100 colors.

- **Scouring Sponge:** A sponge—foam rubber—and a coarse grit—carborundum—have been combined to make a new household scouring device called Rubber Scrubber. The abrasive is glued to one surface of the sponge block, so that both a soft surface and a scouring side are available. A new adhesive, worked out by Du Pont, made possible this invention of Rubber Scrubber Corp. (Watertown, N.Y.).

- **Plump Products:** A couple of new fat-derived products are now being introduced:

- **Archer - Daniels - Midland Co.** (Cleveland) is now selling Adol 32, a straight-chain monohydric fatty alcohol (essentially oleyl) with high color stability, low viscosity and high chemical reactivity. Made in A-D-M's new Ashtabula plant, the chemical is offered for use in compounding detergents, and as an emollient.

- **Humko Co.** (Memphis, Tenn.) is now shipping Hystrene 18-12, a fatty acid derived from fish. The firm emphasizes the low iodine value, light color of this material, sees uses in textile specialties, paper chemicals, cosmetics.

- **Epoxy Developments:** Some new products, techniques involving epoxies—

- **Houghton Laboratories, Inc.** (Olean, N.Y.) has a handy form of epoxy adhesive—the resin is in one collapsible tube, the hardener in another. The user lays a bead of resin, parallels it with one of hardener, and mixes them. Correct proportions are assured, the firm says.

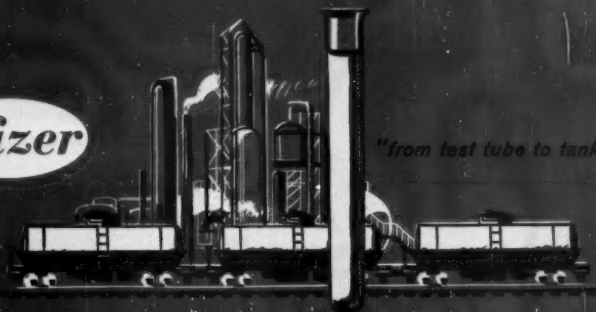
- **Smooth-On Mfg. Co.** (Jersey City, N.J.) is producing an epoxy-repair putty for use on metals. Defects in castings, etc., can be fixed with this metal-resin combination, tagged Metalset A2.

- **Wet or Dry:** Calcium arsenate, which can be applied either as a dust

product from

**Pfizer**

"from test tube to tank car"



## VERSATILE ORGANIC ACIDS AVAILABLE IN QUANTITY

● When Pfizer opened the world's first successful citric acid fermentation plant in 1923, the world price of citric dropped more than two-thirds! Since that time Pfizer leadership in fermentation chemistry has made many other useful acids available to industry in quantity.

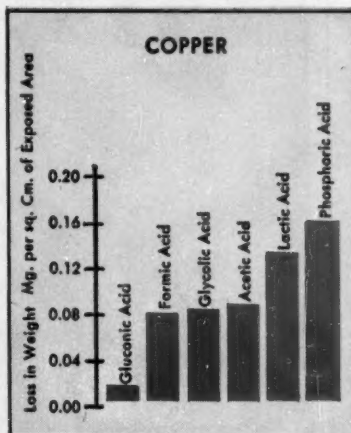
### CITRIC ACID

Pfizer offers citric acid in both anhydrous and hydrous forms. With Pfizer's anhydrous form of citric acid, you save money in reduced freight costs. Why pay freight for 8½ lbs. of water per each 100 lbs. of citric shipped? In addition the anhydrous form offers the advantage of ideal quality control since there is little or no variation in moisture content.

Citric acid is a relatively strong acid notable for its nontoxicity, its sequestering ability and the number of chemical reactions it will undergo. Pfizer also offers citric acid salts and five esters in commercial quantities. These are Triethyl and Tri-butyl Citrates as well as their acetylated forms. Acetyl tri-2-ethyl-hexyl citrate is also available.

### GLUCONIC ACID

By the fermentative oxidation of glucose, Pfizer produces gluconic acid, which it offers as a 50 percent aqueous solution and in the form of stable salts. Gluconic acid has a low order of toxicity, is extremely mild and non-corrosive and has excellent sequestering properties. Tests at Pfizer have shown that 1N gluconic acid solutions affected metals less than any of five other mild acids. Consider copper for example:



### OXALIC ACID

Pfizer developed a fermentation process which yields oxalic acid in a high degree of purity. One of the

outstanding features of this strong acid is its ability to solubilize iron oxide. Pfizer Oxalic Acid is available in granular and fine granular forms. Ammonium, ferric ammonium, ferric and other oxalates are also available.

### TARTARIC ACID

Crystalline deposits in wine fermentation vats provided the raw material from which Pfizer began producing high purity tartaric acid in 1862. Like citric and gluconic acids, tartaric acid is notable for its low toxicity and its sequestering activity.

### ITACONIC ACID

Pfizer skill in fermentation has made industrial itaconic acid a reality. Two carboxyl groups, a conjugated double bond and an active methylene group make itaconic acid a reactive and versatile molecule. Itaconic esters, readily prepared in high yields, can be polymerized and may serve as useful plasticizers. Polyesters of itaconic acid and glycols may be polymerized or copolymerized to hard thermoset resins.

You can order versatile **PFIZER ORGANIC ACIDS** in large tonnages. If you want further information on any of them, write us outlining the type of application you are considering. Pfizer Technical Service can help you with extensive data on organic acids.

### PHYSICAL PROPERTIES OF ITACONIC ACID

CH<sub>2</sub>  
||  
C-COOH  
|  
CH<sub>2</sub>COOH

Formula	H <sub>2</sub> C <sub>3</sub> H <sub>4</sub> O <sub>4</sub>
Molecular Wgt.	130.10
Appearance	white crystalline powder
Melting Point	167-8°C
Solubility in Water	
At 20°C.	8.3 Gm./100 ml.
At 80°C.	72.5 Gm./100 ml.

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## SPECIALTIES

or as a low-gallonage liquid, is now available from Allied Chemical's General Chemical Division. Tagged General Chemical High Suspension Calcium Arsenate, the new material can be put into suspension easily at high concentration (1 lb./gal., so that 7-10 gals. spray/acre is feasible). It's suggested for use on cotton, claimed to give long residual effect, be less wasteful, and give better insect control than do previously offered dusts.

**Taking a Shine to Aluminum:** Al-Glo is a new reduced abrasive powder developed for use on aluminum by Associated Laboratories (Ann Arbor, Mich.). A combination cleaner, polisher, brightener, the new compound is said to be acid-free, mild, non-toxic.

Already heavily market-tested in the Detroit area, the compound is envisioned moving into the \$1-million/year sales bracket during its first year.

## AEROSOLS

**Color Added:** Acrolite Products, Inc. (West Orange, N.J.) is now offering 14 new colors in its line of aerosol packaged acrylic lacquers. The products feature low odor, low flammability, can be used on wood or metal.

**Colored Seam:** Continental Can Co. is now offering its 6-oz. dome type aerosol cans with colored side seam. The side striping, done by spray after the can has been fabricated, is said to improve appearance, also adherence of paper labels.



## Historical Task for Specialties

**INDEPENDENCE HALL**, Philadelphia, home of the Liberty Bell, is now undergoing a \$220,000 face lifting. Foremost among chemical specialties being used is paint remover—in some places 30 coats of paint protect the structure. Methylene-chloride paint strippers

allow workmen to ease down to bare wood. Fire and acid were once (in 1876) tried for the same purpose, with drastic results—scorched wood. Until new paint can be applied, the wood is being protected with water repellents and pentachlorophenol.



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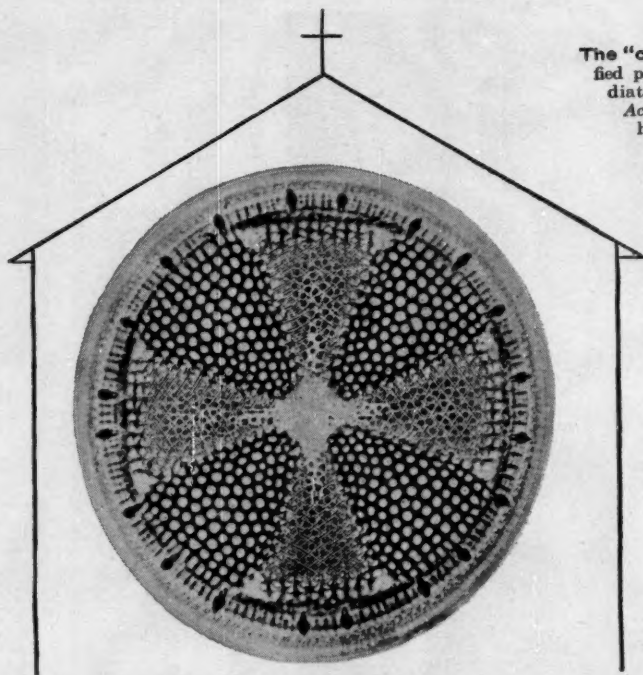
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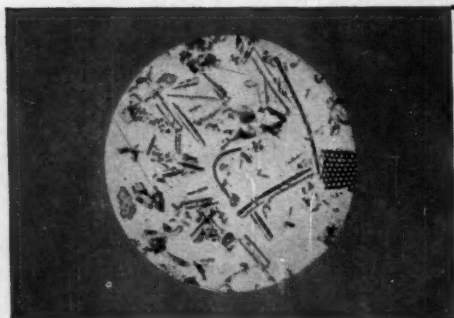
103



The "church window" is a magnified particle (app. 600X) of Celite diatomaceous earth known as *Actinoptychus*. It is just one of hundreds of different intricate particles that together make J-M Celite such an effective filter aid.

*What's this "Church Window"  
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The secret of Celite diatomite's remarkable filtration properties is shown in this magnification. It reveals the open passages between particles, and the porosity of the particles themselves through which liquids flow freely. Yet these openings are so microscopic that they trap even the finest insoluble impurities.

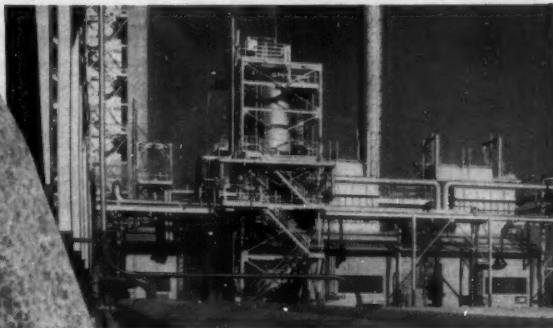
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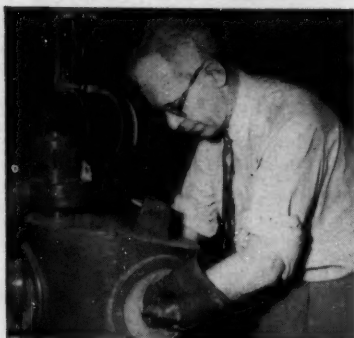
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\*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

## Diatomite Filter Aids



# RESEARCH



These men<sup>†</sup> were among researchers who met recently at University of California to swap ideas for producing, containing and using temperatures of many thousand degrees. Here's why their work is important.

## Next Step

... admittedly a big one, gets into temperatures ranging up to 50,000 C. Some processes requiring these temperatures: mineral synthesis, thermal pumping, metal purification, nitrogen fixation and at the upper limit, gas and condensed state reactions. But these processes cannot be developed, nor can new ones be tried until better methods of producing and containing super-heats are found.

## Now

The top operating level of industrial processes is something above 2,000 C.

## They're Lighting a Fire Under High Temperatures

While the mercury hovered at 92 F on the University of California campus (a real scorcher in normally breeze-blown Berkeley), 700\* research men talked about heat—temperatures of 1,400-250,000 C. Shirt-sleeved chemists, physicists, metallurgists and

engineers attending the University of California-Stanford Research Institute symposium on high-temperature research were sharing the problems of how to produce, contain, and use these ultra-temperatures.

Billed as a "meeting of ideas," the three-day session centered mostly on future projects rather than on achievements. That's because high-temperature researchers—spurred by both national defense needs and potential profits—haven't time to contemplate past glories. Applications follow laboratory findings with startling rapidity, and

often become obsolete just as rapidly.

Here's the high spots of what they said about:

## PRODUCTION

• Atomic Energy Commission's Richard Graham stirred hopes that formidable problems of erosion, thermal shock, etc., will be licked in the development of a nuclear reactor to generate process heat. Said Graham, "We will obtain nuclear source temperatures of 2,000 C within the next five years under static conditions in

<sup>†</sup>Top to bottom: Armour Research Foundation's Samuel Bradstreet; Atomic Energy Commission's Richard Graham; Ajax Electrothermic Corp.'s Frank Chestnut.

\*Nevin Hiester, manager of SRI's Chemical Engineering Section and co-chairman of the symposium, originally estimated that no more than 300 researchers would attend. A week before the symposium started, however, the meeting site had to be shifted to a larger auditorium when it became evident registration would top 600. Nearly every national chemical company sent at least one representative.

## Ultimately

250,000 C.

This point on the scale, already reached under rigorous experimental conditions, highlights what may well be the ultimate high-temperature process — controlled nuclear fusion. A temperature of 250,000 C was attained by scientists seeking a "trigger" for the fusion reaction, estimated to proceed at several million degrees.



Center's Heinz Fischer has been attaining ultra-high temperatures with short time electrical discharges. In his vocabulary, high temperatures range upward from 200,000 C.

But even in Fischer's apparatus, such temperatures are short-lived. Gas temperatures over 250,000 C have been produced—but sustained only for 1 to 10 microseconds.

Fischer also discussed a low pressure (1-750 mm mercury) apparatus developed by the Russian scientist Igor Kurchatov, which has reportedly produced temperatures close to 1,000,000 C in deuterium.

## CONTAINMENT

- Earl Parker, of University of California, spurned defeatism in one area—ceramics for ultra-high temperature uses. So far, ceramics have proved too brittle for this purpose. "The brittleness of ceramic materials," avers Parker, "is not an inherent property common to all non-metallic inorganic compounds. Certain solids (e.g., sodium chloride, potassium chloride) can be made ductile merely by changing surface conditions. With creative research, perhaps ductile refractory ceramics can become a reality instead of a dream."

- In the same realm, Armour Research Foundation's Samuel Bradstreet revealed ARF's development of a flame-sprayed titanium oxide coating that is essentially non-porous and quite refractory. To date, the porous nature of flame-sprayed oxide coatings has severely limited their uses.

- Brigham Young University's H. Tracey Hall (who helped synthesize the first diamonds at General Electric Co.) cited some pertinent areas for research on the relationship between high temperature and high pressure.

One melting point as a function of pressure. Melting points are profoundly affected by pressures of around 200,000 atm. The m. p. of some refractories is increased by well over 1,000 C.

## APPLICATION

**Cashing in on Heat:** Some industrial processes (e.g., refractory making) already use temperatures in the 2,000-3,000 range. And many feel that more

and more chemical processes will be tailored to this range (*CW*, October 9, '54 p. 62). But as temperatures rise beyond this band, a new, fourth state of matter appears.

Wolfgang Finkelburg of Siemens-Schuckertwerke's research laboratory in Bavaria showed how.

In the case of nitrogen, for example, raising the temperature from 2,000 to 30,000 C decreases the particle density of the gas to about 1% of its original value. Furthermore, the gas becomes a conductor with a specific resistance twice that of mercury's.

- Brigham Young's Hall voiced these ideas about:

Mineral synthesis. Hall thinks production of many new minerals incorporating heavy elements with the less familiar elements of the periodic table may be especially rewarding.

Synthesis of novel chemical materials. Hall says the conversion of ammonia to a metallic form at pressures somewhat over 200,000 atm. will soon become a reality.

- A. V. Grosse, president of the Research Institute of Temple University, has made torches using powdered metals such as aluminum, iron, silicon and magnesium that have yielded temperatures in the 3,500 C range. Possibility: the principle might be useful in production of titanium metal above its melting point.

- Resistance furnace-maker Ajax Electrothermic Corp.'s (Trenton, N.J.) Frank Chestnut outlined this research goal:

"I would try to find out why graphite muffles (high-temperature furnace linings) of present composition disintegrate or crumble when operated for long periods at high temperature.

"I believe that if the graphite muffle would remain intact, uses would be found for the high temperatures that could then be maintained. One possibility here is the continuous production of graphite for making carbides."

Symposium speakers were quick to confess ignorance of many aspects of high temperature research but that, observers felt, was a good sign. At least now they recognize what they don't know. Now that enough data exists to permit the posing of intelligent questions and suggestions for specific research programs, these areas of ignorance should steadily shrink.

## Temperature Research

what we might call reactor experiments of advance design."

Initially, he expects these reactors will operate at around 1,400 C. Nuclear heat could help still-to-come endothermic reactions succeed commercially, prove a boon to existing processes. Likely candidates: acetylene from natural gas, synthesis of hydrocyanic acid from methane and ammonia, and coal gasification (currently under study by the Bureau of Mines).

- Working at the high end of the scale, Air Force Cambridge Research

## WHAT TRADE ASSOCIATIONS SPEND FOR RESEARCH AND DEVELOPMENT

*From a survey by Battelle Memorial Institute (Columbus, Ohio) for the National Science Foundation.*

Industry	Number of Organizations	Total Outlay	Average per Organization
		(in thousands)	
Metal mining	1	\$ 40	\$ 40
Coal mining	4	853	213
Crude petroleum and gas extraction	3	458	153
Mining and quarrying, nonmetallics	2	92	46
Food and kindred products (manufacturing)	26	4,160	160
Textile-mill products (manufacturing)	5	661	132
Paper and allied products (manufacturing)	3	232	77
Chemical and allied products (manufacturing)	16	972	61
Products of petroleum and coal (manufacturing)	3	1,274	425
Rubber products (manufacturing)	1	23	23
Stone, clay, and glass products (manufacturing)	11	1,751	159

## Dollars Don't Tell All

Research spending by trade associations is a small bite of industry's whopping \$4-billion research budget. But the impact of the former is much greater than dollars alone can measure.

That's the conclusion drawn by National Science Foundation (Washington) from its just-completed survey of the amount of technical research and development conducted by trade associations and other "cooperative organizations."

NSF's report covers 543 such organizations—trade associations, professional and technical societies, farm and research-educational co-ops. The study itself was done for the foundation by Battelle Memorial Institute.

Altogether, the 543 groups spent \$21 million for research and development in 1953, the survey year. Nearly all of this went into technical fields—only a small fraction into economic and social-science projects.

According to NSF Director Alan Waterman, the "unusual significance" of this small slice of research lies in the influence it exerts on industry's research policies and practices. He cites the American Petroleum Institute, which, in 26 years of continuous basic research, "has contributed much of the fundamental knowledge underlying the foundation of the industry today." Yet, API says another 26 years of research will not answer all the basic questions about petroleum constituents that existed when the program was started.

NSF's report points out that, "in many cases, the cooperative groups perform all the basic research for the industry and such basic research may be invaluable regardless of its cost. Applied research . . . tends to concentrate on problems common to all . . . members, or at least a sizable proportion. . . . By preventing duplication

of effort on the part of individual members, sizable savings are effected for the industry."

The professional and technical societies, while spending only \$2.3 million themselves, are constantly stimulating research outside their organizations. A few contribute financially to research by others, but they exert their greatest influence by publishing research papers and sponsoring meetings at which technical matters are discussed.

Although it has long been apparent that trade association research has been prospering (*CW*, July 10, '54, p. 74), the new report does a lot to delineate the shape that such research has been taking. Of the \$21-million total, it states, 70% went for applied and 30% for basic research, the latter mainly in chemistry and engineering.

One-third of the groups surveyed—with trade associations far in the lead—accounted for fully seven-eighths (\$18 million) of the money spent for technical research. Their expenditures ranged from less than \$100 to the nearly \$1.7 million spent by the Hawaiian Sugar Plantations Assn.


Where do the cooperative organizations spend their technical research and development dollars? The 173 organizations that broke down these expenditures earmark the largest chunk—\$9.5 million—for work by their own laboratories. The balance is spent with college and commercial labs, other nonprofit institutions, government agencies and member companies. The smallest amount, \$300,000, goes to labs operated by the last-named.

The lion's share of these funds is put up by industry—as membership dues, special assessments, voluntary contributions, etc. Lately, more of this money is coming from organizations' general revenue funds.

Professional societies, on the other hand, rely on voluntary contributions for the bulk of their research money—which, incidentally, includes money given to them for research by trade associations. While trade associations lean heavily to applied research, professional and technical societies spend \$5.03 on basic research for each dollar spent on applied research.

**How They See Themselves:** Associations' views of their own research activities cover the spectrum.

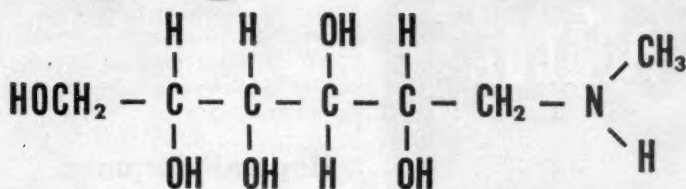
Some of the 21 trade associations



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## RESEARCH

that support only basic research have misgivings about the effectiveness of their work. Several say that their members are not taking full advantage of their services, partly because their association's budget for basic research is too skimpy to do an adequate job. Three unidentified groups contend they should be spending at least \$3 million a year to keep abreast of technical developments.

Others complain that their research programs serve mainly as a "good promotional tool," rather than as an effective instrument for solving problems.

Nevertheless, NSF's report forecasts a steady expansion in research and development programs of trade association and other cooperative groups. NSF expects the 531 organizations in the field (in 1953) will be spending over \$24 million by 1958 for research. And NSF forecasts that another 60 will be added to their numbers by 1958, adding yet another \$2 million for research.

## Hopeful Hormone

Hopes that 7 out of 10 stillbirths can be prevented were raised this week with the unveiling of a new hormone for expectant mothers. A form of the female sex hormone, relaxin, the new drug has displayed a high degree of efficacy in six years of clinical trials. With conventional treatment, about 14% of stillbirth-threatened infants survive.

Called Releasin, the hormone is a natural substance derived from the ovaries of pregnant sows, was developed by Warner-Chilcott Laboratories (Morris Plains, N.J.), division of Warner-Lambert Pharmaceutical Co. It works by relaxing the ligaments that bind together the two halves of the pelvis, causes tissues of the uterus and birth canal to soften and dilate.

Discovered 31 years ago, the compound has only relatively recently become available in sufficient quantities for testing. Even so, the drug is still too scarce for general use—a situation due to lack of a sufficient supply of raw material. Warner-Chilcott expects that the quantity available in the next few years will suffice for only about one-tenth of the anticipated 200,000 annual U.S. cases of stillbirth. And the cost will be upward of \$150 for each case.

Robert Kroc headed research on the drug at Warner-Chilcott. Frederick Hisaw, professor of zoology at Harvard University, pioneered the basic hormone research.

## Tempered Taxes Soon?

A proposed new regulation, circulated last week by the Internal Revenue Service for industry comment, gives chemical and other firms more liberal income-tax deductions for their research expenditures. The proposal sets out the rules and procedures that the government will apply to firms taking such deductions. It puts teeth into the deduction granted by Congress for research and experimental spending in the 1954 revision of the internal revenue code.

So far, IRS has allowed such deductions (under its administrative authority) but subject to tighter limits than Congress—specifically authorizing such deductions for the first time—put in the new tax code. The old IRS rules will be dropped once the proposed new regulation is issued; and companies will be allowed to retroactively apply the more liberal rules to research costs incurred during taxable years beginning after Dec. 31, 1953, and ending after Aug. 16, 1954.

The proposed regulation fills one big gap left by the Congressional tax writers—lack of a definition of what is and what is not a deductible expenditure for "research and experimentation." Here's how the new rule draws the line.

"The term 'research and experimental expenditures,' means expenditures incurred in connection with a taxpayer's trade or business, which are not deductible under any other provision of the internal revenue laws (e.g., depletion allowed extraction industries—*ed.*) and which represent research and development costs in the experimental or laboratory sense."

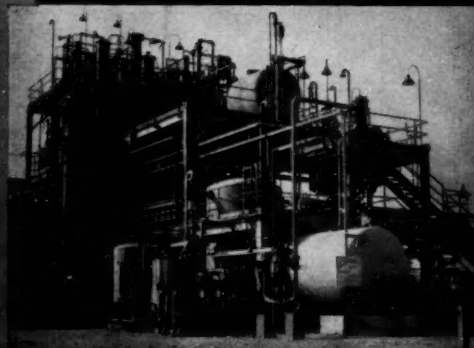
Included within this definition are "generally all such costs incident to the development of an experimental or pilot model, a plant process, a product, a formula, an invention, or similar property, and the improvement of already existing property of the type mentioned."

IRS kept the proposed regulation open for written exceptions until July 20. It will probably hold public hearings before issuing final rules.

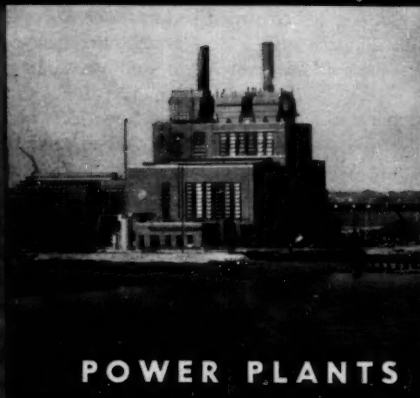
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# MARKETS

## U. S. Glass Fiber Production:

WHO'S ... Known to be EXPANDING  
Making What and Where

Company	General Products (wool-type fibers*)	Textile Products (textile-type fibers**)
Owens-Corning Fiberglas	<ul style="list-style-type: none"> <li>✓Barrington, N.J. (under construction)</li> <li>✓Newark, O.</li> <li>✓Kansas City, Kan.</li> <li>✓Santa Clara, Calif.</li> </ul>	<ul style="list-style-type: none"> <li>✓Ashton, R.I.</li> <li>✓Huntington, Pa.</li> <li>✓Anderson, S.C.</li> </ul>
L-O-F Glass Fibers	<ul style="list-style-type: none"> <li>✓Defiance, O.</li> <li>Burbank, Calif.</li> </ul>	<ul style="list-style-type: none"> <li>Parkersburg, W. Va.</li> <li>Vienna, W. Va.</li> <li>Waterville, O.</li> <li>✓Houston, Tex.</li> </ul>
Gustin-Bacon Mfg. Ferro Pittsburg Plate Glass	<ul style="list-style-type: none"> <li>Fairfax, Kan.</li> </ul>	<ul style="list-style-type: none"> <li>Nashville, Tenn.</li> <li>Hicksville, N.Y.</li> <li>Shelbyville, Ind.</li> </ul>
Modigliani Glass Fibers U.S. Glass Fiber Texas Glass Fiber Imperial Glass Friedrick & Dimmock	<ul style="list-style-type: none"> <li>Lancaster, O.</li> <li>✓Grandview, Tex.</li> <li>Bellaire, O.</li> <li>Atlantic City, N.J.</li> </ul>	<ul style="list-style-type: none"> <li>Manchester, Conn.</li> </ul>

\*Wool (various forms), bonded mat, coarse fiber packs.

\*\*Yarns, staple and continuous filaments, coated yarn, scrim fabric, rovings, reinforced mat.

for operation this October, plus a \$25-million expenditure during '56 to rebuild, gradually, its oldest installation at Newark, O., install new furnaces at its Ashton, R.I., plant, expand existing textile facilities, add fabricating equipment and warehouse space, and improve process equipment at all its plants.

During 1957 and '58, Owens-Corning plans to spend another \$25 million for major process improvements, facilities for new and improved products, and further mechanization of operations.

• L-O-F Glass Fibers this year is spending about \$200,000 for a new warehouse at its Defiance, O., plant, and \$250,000 for fabricating space being added to its Houston, Tex., layout. The latter will then be able to make 20 million sq. ft. of products annually, and will be the world's largest flat and corrugated reinforced-plastic panel plant. (The plastic compounds, incidentally, will come from the Midwest, and spun-glass fibers from the company's plants in West Virginia and Ohio.)

• Texas Glass Fiber (Grandview, Tex.) this year will add 10 spinning drums with a capacity of 12,000-15,000 lbs./week. This new line will turn out mat for reinforcing plastic laminates. (The firm is also eyeing Puerto Rico as a likely site for further expansion.)

Last year, Modigliani Glass Fibers broadened its Lancaster, O., operations with a new warehouse, new air-filter assembly plant, and a new, larger furnace.

**From Two—Many:** How much will these expansions add to total U.S. capacity? That's difficult to determine. Fact is, it's nearly impossible to pinpoint over-all poundage statistics for the industry—end-use ramifications preclude it.

In general, fibrous glass products break down into two broad categories—general products, made from wool-type fibers, and textile products, made from textile-type fibers. Though there is some overlapping, the former may be subdivided into thermal and acoustical insulation products, fibrous glass mat, air filters and aerial packs; the textile products subdivide into a textiles category (e.g., yarn, fabrics,

## Fiberglass Buildup Coming

One imposing problem now facing the U.S. fibrous glass\* industry—adequate capacity to meet fast-growing demands—will, within the next year or two, be whittled down to more reasonable proportions. But even then, producers will still be pressing hard to meet the anticipated (by 1960) \$300-million/year sales requirements of construction, rubber, plastics, paper, appliance, textile and a multitude of other outlets.

Today, fiberglass industry production and sales are nearly \$200 million/year—an incredible 5,000% increase over the \$3.8-million business racked up in '39. At that time, though, only one firm, Owens-Corning Fiber-

glas, was manufacturing glass fibers; today there are at least 10 producers (see table).

The industry's vigorous expansion program is being financed mostly through reinvested earnings and reserves with little outside borrowing. And, except for one new plant now under construction, upcoming expansions, as in the recent past, will take the form of additions, further mechanization and other improvements of existing plants.

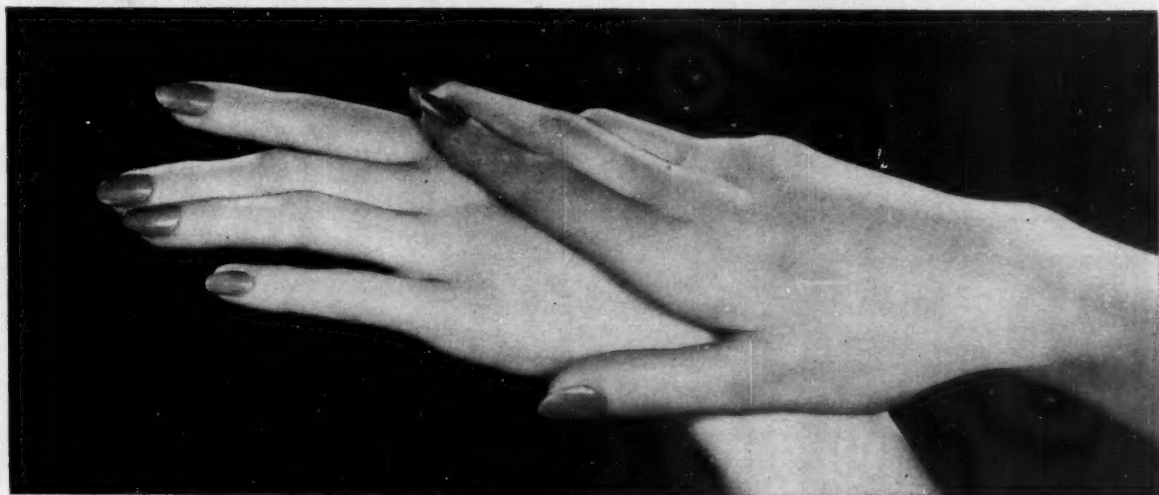
In a recent survey of the entire U.S. fiberglass field, Eric Cumpiano, an economist with Puerto Rico's Economic Development Administration in New York, lists these announced growth plans:

• Owens-Corning Fiberglas. A new plant at Barrington, N.J., scheduled

\*Generic label gradually being adopted by the trade. Fiberglass is a trademark of Owens-Corning Fiberglas, not a synonym for glass fiber.



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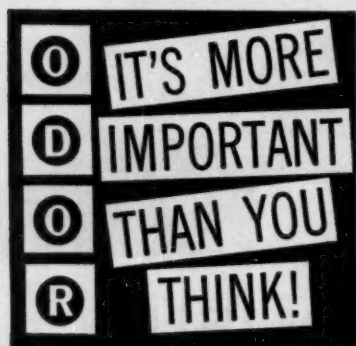
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## MARKETS

staple), and materials for plastic reinforcement.

From the basic forms, thousands of individual products are fabricated either by the fiber producers or by their customers, and application of these continues to grow more widespread.

In his report, Cumpiano cites the lack of specific production and consumption data, but offers a '54 breakdown for the leading producer (Fiberglas) as typical of the industry, though he cautions that it may understate the importance of textile use of glass fibers (*see box*).

**Resin Bolster:** The pattern, however, may change in the not too distant future with a higher percentage of glass fiber consumption in the textile-type group. Reason: increasing use of glass-fiber-reinforced polyester plastic materials.

The reinforced-plastics industry, of course, was a World War II-spawned development, and its experimentation period was financed largely by war contracts. This segment of booming plastics trade depends largely on the availability of glass fibers that often provide more strength, at a given cost, than any of the other fibers (cotton, asbestos, nylon, etc.) used for this purpose.

Resin-glass plastics, in the past few years, have edged into many outlets previously held exclusively by woods, metals, and other materials. And the future for reinforcing fibers appears even brighter as plastics reach maturity as building materials for auto bodies, appliance parts, furniture, bathtubs, other preformed articles.

Cumpiano's survey points out that before 1955 the annual sales rise of reinforced plastics averaged 40%. Sales in 1955 exceeded '54's by approximately 80%. And industry prognostications indicate that use of reinforced plastic materials in 1956 should top '55's record by at least 50%.

On the other hand, while the general glass fiber products aren't stagnating, their use will probably rise at a considerably more modest rate than the textile types. The general fibers have benefited greatly from the construction boom of the past 10 years (particularly in wool-like insulation products), and even if this building expansion tapers off, the remodeling market offers a substantial growth potential. Auto and appliance insula-

tion outlets, though, will probably remain relatively stable.

One tough hurdle the glass fiber industry faces is the manufacture of a quality product at a low cost. In almost every market, present or future, fibrous glass products meet stiff competition from older, longer established materials. Too, the industry must cope with the potential threat from new materials, for example plastic insulation foams that are being developed commercially.

Since basic fiber producers are integrated and dominate both ends of the industry—fiber manufacturing and fabrication—markets for glass fibers and for glass fiber products can't be distinguished from each other. Therefore, more important in this respect is the type of product made from the glass fibers (*see table, p. 112*).

As with most glass products, the glass fiber industry as a whole is historically oriented towards raw materials, especially silica and fuel, but other factors are increasingly gaining priority in plant location decisions. The nearly decisive factors today are transportation costs to the market for general products, and labor costs for textile-type glass fiber items.

**Puerto Rican Possibilities:** As noted earlier, Texas Glass Fiber (and almost certainly some other fibrous glass producers and fabricators) is weighing the possible advantages of Puerto Rico as a site for new plants. Cumpiano presents some convincing arguments for such a move. Fiber production and fabrication in Puerto Rico, he avers, can be much more profitable than on the U.S. mainland. One reason: it would combine tax exemption with lower delivered total cost to markets.

### Glass Fiber Use (1954)

	Percent of total sales
General Products	76
Insulation	66
Bonded mats	6
Mechanical filters	4
Textile Products	24
	100



About 1,100 tank cars are in constant service at Petro. Here some of them wait on the B&O siding for their turn at the loading racks. An advantage

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Petro can manufacture products other than these if the demand arises—products that can be made from the many raw materials available at the plant site.

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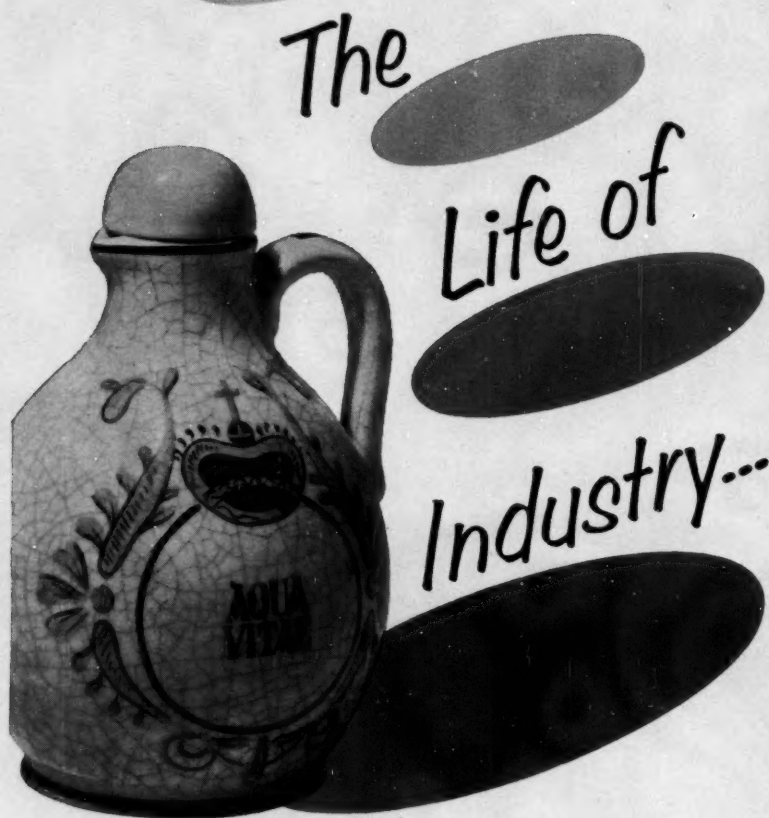
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## MARKETS

The Puerto Rican economist notes that during 1955 Owens-Corning Fiberglas spent more than 9% of its sales dollar to pay for delivery of products to customers. One of the more important reasons behind the Barrington expansion, he says, is the freight saving in supplying the Eastern market with general glass fiber products. The same advantage, he concludes, would accrue to a Puerto Rico-located plant in regard to wide-open markets in the Southeastern region of the U.S., in the Caribbean area, South America and Puerto Rico itself. Labor cost advantages loom larger than freight savings in possible Puerto Rican production of glass fibers for textiles and reinforced plastics, since volume is comparatively smaller than the wool-type glass fiber products.

Puerto Rico also has practically unlimited local supplies of two of the three basic glassmaking raw materials, silica sand and limestone. Thus, U.S. glass fiber makers, convinced that current and near-future expansions will on the mainland have to be supplemented to meet the anticipated widening demand, may well decide that an offshore move is indicated.

## Export Skid Coming?

U.S. lithium grease exports to Canada—now some 12 million lbs./year—may be in for drastic cutbacks, perhaps total elimination. Reason: Canada's first continuous-process lithium grease plant—now onstream—is capable of supplying all the Dominion's needs, has capacity left over for export.

Maximum capacity of Surpass Petrochemical's (Scarboro, Ont.) Girdler-built Votator grease installation is 26 million lbs./year if operated on a 24-hour, 7-day basis.

In addition to lithium greases, Surpass will produce other chemicals now imported from the U.S., some of which will be made under manufacturing agreements with Foote Mineral, Bray Chemical and Alox Corp.

Among new products the company plans to make and market soon: corrosion control additives for use in automotive, jet engine, and burning fuels; corrosion inhibitors for crude oil systems; glyceryl and other esters; amines; synthetic sulfonates (a new plant will be completed within a few months); oxygenated hydrocarbons; organometallic (lithium) compounds.

# This plant handles chlorinated hydrocarbons

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Are the corrosives you use as vicious in their attack on pipelines as hot chlorinated hydrocarbons? Or strong water HCl dilutions?

These chemicals cost the Thiokol Corporation large amounts of money at their Moss Point, Miss., plant when it was started. The corrosion rate was high. Pipeline replacement was frequent. In short, there were serious corrosion problems.

After testing many kinds of pipe, Thiokol installed PYREX brand glass pipe, which tests proved most economical.

## **Maintenance costs reduced**

After four years of steady service, these lines look and operate like new. They are free of corrosion and erosion.

Cost figures over the four-year period still indicate that PYREX pipe is the most economical installation for this exposure. At Thiokol, maintenance is very simple and cost is reasonable.

## **Thiokol Corp. avoids cleaning trouble**

In this process, paraformaldehyde occasionally builds up. This could be a real threat in any opaque pipe but it's visible in glass. As soon as it collects, Thiokol flushes it out with steam.

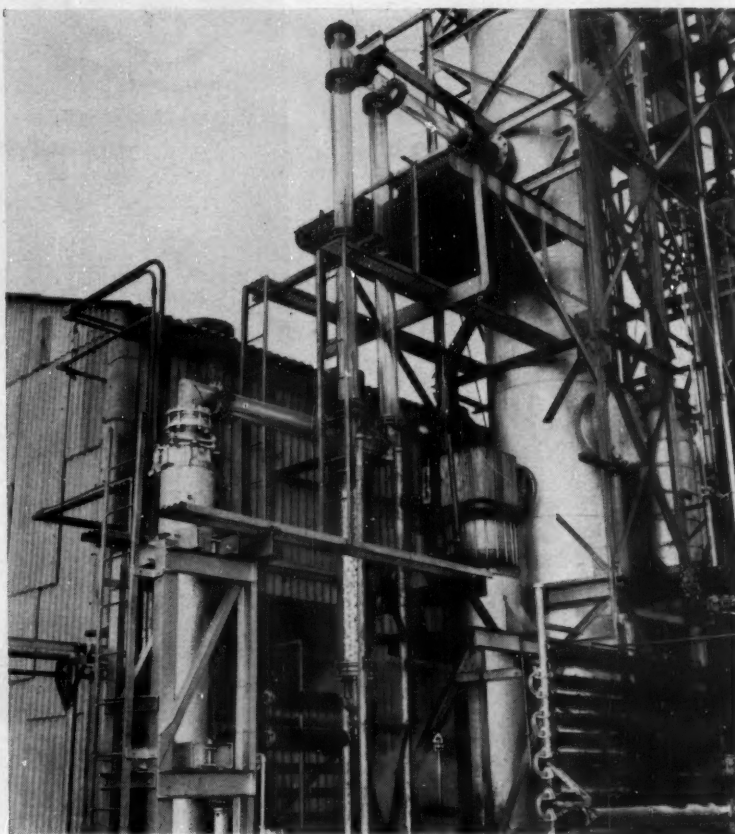
Easy cleaning is a prime characteristic of PYREX pipe. Suppose you want to use the same lines for incompatible fluids. You clean glass lines at change-over time simply by flushing them with low pressure steam, hot water, detergent solution, or, in some cases, with dilute HCl. No down time, no difficulties. And you see when lines are clean.

## **Easy, low-cost installation**

The men who regularly install your piping can install glass pipe easily, even if they've never worked with it before. Thiokol's own men cut and assemble PYREX brand pipe. The field kit makes this an easy job.

## **Your corrosion problem**

No matter what corrosives you transport, except HF and hot concen-



Four years of hot chlorinated hydrocarbons and strong solutions of HCl and water and pump vibration . . . yet these glass lines operate today as well as they did when new.

trated alkalis, PYREX brand glass pipe stops the corrosion problem.

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Name..... Title.....

Company.....

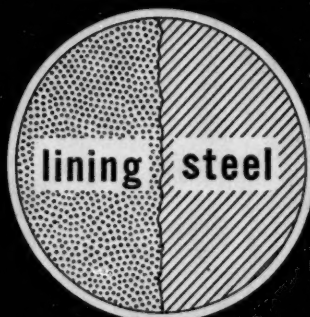
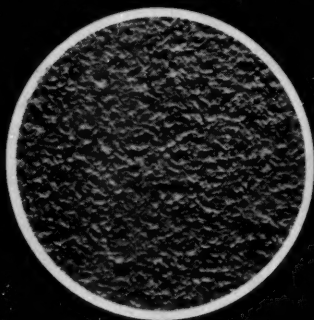
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and leaves a sawtoothed, naked surface for linings to grip. In other words, they're *integrated* directly to the steel.

And Rheem learns more from planned abuse, like how to cure linings on drum bodies and on their tops and bottoms in separate ovens for the individual treatment their different shapes require.

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## Market Newsletter

CHEMICAL WEEK  
July 21, 1956

**Copper and copper chemicals price gyrations** have buyers guessing again. Copper compound prices have been spiraling upward since last fall, and two increases in March (*CW Market Newsletter*, March 3 and 31) bounced tags to all-time highs.

First sign of a break came about three weeks ago when copper cyanide price was reduced by 3¢/lb.; and last week carload prices of copper sulfate crystals declined \$1.50/cwt., to \$15.20; tribasic copper sulfate dropped \$3.20/cwt., to \$32.65; and the monohydrate went down \$2, to \$25/cwt.

Soon after, copper chloride tabs were cut by 2.5-3.5¢/lb. (depending on grade), reducing l.c.l. prices of regular crystals, dried crystals, and anhydrous forms to 32¾¢, 41¢ and 47¾¢/lb. respectively.

And late last week, copper carbonate was pressured by the metal's downward price movement. Carbonate price reductions of 3¢/lb. set the c.l. level at 37¾¢/lb. and l.c.l. at 2¢/lb. more than that. Basis on both: bags, f.o.b. works.

The earlier sharp break (6¢/lb.) in the metal's price that brought producers' quotes to 40¢/lb. is reportedly the result of buyers' clamoring for a more realistic price—one that would be more in line with the much lower world and domestic custom smelters' tags.

But coincident with the posting of the copper chemical decreases, U.S. custom smelters pulled a switch, jacked their material up ½¢/lb., restoring the previous 38¢/lb.

•  
**A raft of plant expansions**—now onstream or nearing completion—will boost supplies of a variety of chemical products. For example, two new tall oil fractionating plants built by Hercules Powder will produce an estimated 115 million lbs./year of rosin and fatty acids from about 140 million lbs. of raw material.

One plant, at Franklin, Va., is now operating on a shake-down basis; the second unit, at Savannah, Ga., will start production at the end of the third quarter.

Both units—designed for an 80% yield of rosin and fatty acids—will use crude tall oil obtained (under long-term agreements) from neighboring kraft pulp mills.

•  
**Quadrupled output** of Stauffer's soil sterilant—chemically sodium *n*-methyl dithiocarbamate and trade-named Vapam—has been made possible by a just-completed expansion of the firm's unit at Chauncey, N.Y.

The fumigant (*CW*, July 14, p.86) made in the new unit will be shipped to distribution centers in Eastern U.S.; Western sales points are being supplied by a plant at Richmond, Calif.

•  
**Polyvinyl acetate buyers can look for increased supplies** when Borden

## Market Newsletter

(Continued)

opens its new polymerization plant at Demopolis, Ala., on Aug. 1. Initial production capacity is about 10 million lbs./year; tank truck, tank car, and drum quantities will be shipped to Southeast and Southwest markets.

**More details are available on three new plants** just started up by International Minerals & Chemical (*CW Business Newsletter*, July 14).

Nepheline syenite will be produced at a \$1.5-million mine and plant—100,000 tons/year capacity—at Blue Mountain, Ont. The product is a low-iron, high-alkali, high-aluminum material used to make glass.

A mica beneficiation plant at Greenville, Tenn., costing about \$500,000, and having a capacity of 64 tons/day, will help relieve a current shortage of ground mica.

A perlite grinding unit at Los Angeles will supply paint, paper, filteraid, and filler markets. Plans provide for a capacity-doubling in the future.

### **Two items of interest to metal marketers:**

- The Atomic Energy Commission is making an emergency purchase of zirconium from Japan. The 200,000-lb. order reportedly will cost \$2.4 million, or \$12/lb.

- The British government plans to release 1,000 76-lb. flasks of mercury from its stockpile, asks that applications be submitted by the end of this month.

**Closer to home and perhaps more pertinent** to U.S. chemical sellers is the latest word on how Canadian shipments of chemicals and allied products are doing. They're growing. In the first five months of '56, such deliveries to the U.S. alone increased to nearly \$59.5 million, compared with the '55 tally for the same period—a shade under \$53.3 million.

Canadian chemicals are making a bigger dent in other world consuming areas, too. Shipments to all non-Canadian markets, reports a government source, climbed to about \$95.6 million. Last year's five-month total: approximately \$93 million.

### **SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 16, 1956**

#### **UP**

	Change	New Price
Amyl salicylate, cns., dms. ....	\$0.08	\$0.82
Diphenyl oxide, perfume grade, cns. ....	0.02	0.56
Ethyl butyrate, dms., c.l., works ....	0.05	0.85

#### **DOWN**

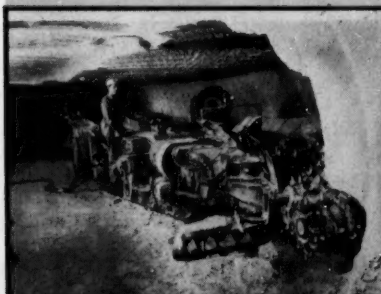
Copper carbonate, 55%, bgs., c.l., works ....	\$0.03	\$0.3775
Copper metal, electrolytic, dlvd., Valley basis ....	0.06	0.40
Copper sulfate, C.P., gran., bbls., works ....	0.015	0.221

All prices per pound unless quantity is stated.

THERE'S ONLY **1** BASIC PRODUCER OF

# caustic potash

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

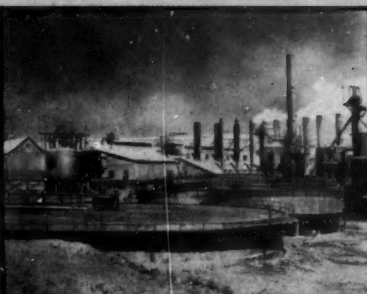


## MINES

at Carlsbad

—the raw material  
(sylvite ore)

KCl - NaCl



## REFINES

at Carlsbad

—potassium chloride

KCl



## MANUFACTURES

at Niagara Falls

—caustic potash

KOH

*What's the advantage to you in buying from a basic producer? Greater security of supply. Consistently uniform quality. High purities. Prompt shipments on schedule.*

*International, alone among suppliers of Caustic Potash, is a basic producer, controlling production from ore bed to finished product. From sylvite ore mined at the 900 ft. level, the Carlsbad refinery produces electrolytic grade KCl. This 99.95+% pure material is shipped to the Niagara Falls plant for the manufacture of KOH and other potash salts.*

CAUSTIC POTASH  
CARBONATE OF POTASH  
POTASSIUM CHLORIDE  
SULFATE OF POTASH  
HYDROFLUOSILICIC ACID  
MAGNESIUM OXIDE  
LIQUID CHLORINE  
MURIATIC ACID

**potash division**



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61 BROADWAY, NEW YORK 6 • MIDLAND, TEXAS • FULTON NATIONAL BANK BLDG., ATLANTA, GA.



AT COLON FREE ZONE, nearby markets, big tax benefits and inexpensive labor beckon U.S. firms to . . .

## Latin-American Sales Short Cut

When W. P. Fuller, San Francisco paint manufacturer, recently signed a contract with the Colon Free Zone of Panama, they joined a growing group of U.S. firms that have set up operations there to sell and service the Latin American market.

Other U.S. firms already operating in the area include Pfizer, Squibb, McKesson & Robbins, Parke, Davis, Chlorox Chemical, Gillette, Good-year, Kraft Food, and Blatz Brewing. And Dow Corning is said to be ready to make the move south soon. But it's far from a strictly American venture. Other countries—Britain, Germany, Japan, Sweden and Italy—have also moved in.

One of the big attractions of the free zone is quick delivery. Exporters can stockpile goods in the zone (much cheaper than warehousing them in the U.S.), then air-express deliveries out when orders are obtained.

Tax concessions and the freedom to process and package commodities in the zone using relatively cheap Panamanian labor are important other reasons why companies are looking favorably toward the zone.

Physically, the zone consists of 100 acres of fenced land located within

half a mile of the Atlantic port of Cristobal. Trucks connect the zone with Tocumen International airport located some 50 miles away. The airport is served by eight international airlines that fly daily to most major South American cities.

Companies can sign operating contracts with the zone for periods up to 20 years with rates, taxes, and other charges guaranteed not to increase. Contracts permit a company to "bring in, store, exhibit, unpack, manufacture, put in containers, mount, assemble, refine, purify, blend, alter, and, in general, perform operations with, and handle all kinds of, merchandise, products, raw materials, containers and other articles of commerce" with the exception of certain dangerous commodities and firearms.

Sales can be made from the zone in four ways: 1) sales for consumption in the canal zone (including U.S. armed forces stationed there); 2) sales to ships in transit through the canal; 3) goods may be re-exported to other countries (by air or water); 4) goods may be sold for consumption in Panama (subject to normal import taxes and custom regulations).

Companies can get warehouse space

in the zone in one of three ways: land can be leased for 25 years with renewal options, and a company can build its own warehouse (monthly lease rate: 10¢/sq. meter); buildings owned by the free zone can be leased with monthly rates ranging from 55 to 75¢/sq. meter; public warehouse space can be rented at monthly rates of about \$1.50/ton.

Companies using the free zone must pay Panama's social security fees and income taxes on profits earned from the sale of products from the zone; the country's laws call for 8% of an employee's salary to be paid into social security funds—4% each by employer and employee.

Where a company's operations are confined entirely within the free zone, it pays income taxes at rates about 50% below those of Panama itself. Under a 1953 law, the maximum income-tax rate that can be charged is 16% on lease contracts signed with the free zone.

Potential users of the zone are being wooed by these attractions:

- Excellent ship and air service. Cristobal, port for the free zone, can handle any size merchant ship, and has first rate cargo handling facilities.

Both Panama and United Fruit steamship lines have weekly sailings to the zone from New York; W. R. Grace has one ship every 6 weeks. Going rate for pharmaceuticals is \$36 for 40 cu. ft. (or (2,000 lbs.), plus a \$2.20 Isthmus transfer fee.

Air service to the zone is good, too. In addition to 14 flights per week from New York via Panagra, potential shippers can also ship via Braniff, KLM, Lasca and A.S.A. from Miami, by Taca and several other lines from New Orleans. From New York, pharmaceuticals move at rates of about 30 cents/lb. for loads in excess of 1,000 lbs., 50 cents/lb. for loads under a 1,000 lbs. Fastest delivery via air takes about 12 hours. However, off-loading operations at Miami have slowed some deliveries to periods exceeding one week.

- Adequate banking facilities. Chase Manhattan and First National City Bank of New York have branch banks in Panama, as do several domestic and other foreign banks. Panama's currency is valued the same as U.S. currency with a free interchange. Dollars are available with no restrictions on taking money in and out of the country.

- Labor. Unskilled workers are paid approximately 30¢/hour. Other hourly rates: semiskilled, 35¢; clerks 50¢ to \$1; junior accountants and bilingual stenographers, from \$1 to \$2.

The free zone is run by a general manager; a board of directors (mostly businessmen, including some Americans) is set up over him.

Here's how two of the companies in the free zone now operate:

**Parke, Davis.** One of the "old-timers" in the free zone, P-D uses it as a distribution center to handle Central and South American activities in areas where they have no branch

offices. Management of the free zone office is handled from a sales office in Bogota, Colombia, a two-hour trip by air. Besides being close to their customers, P-D said one of the big reasons for moving their American export sales out of New York were some unhappy experiences due to longshoremen's strikes there. Greatest advantage to operating in Colon, concedes P-D, is the fact that it pays no duty. Almost all personnel for the zone area is locally recruited.

**Pfizer International.** Pfizer uses the zone for shipments to both Europe (Belgium and France) and Asia (Hong Kong, the Philippines, Japan, India and other Eastern areas). They ship to Argentina and all of Central America by air only; to other points in South America by ship and air. Since most custom duties are assessed by weight rather than value, they claim it is often cheaper to ship by air than by sea when the cargo is a high-value lb./product. One of the big reasons for being in the zone, says Pfizer, is that it can service South American distributors (who might not be in a position to raise the capital for extensive warehousing) in three days. This puts the distributor in a position to promise governmental buyers of drugs in South and Central America delivery in 2 or three days instead of several weeks. Pfizer does very little filling (25%) at the free zone. They usually ship in the filled containers, label them there. A Spanish "universal" label is approved for all South American countries except Brazil. For products headed for Europe, Pfizer usually takes advantage of the low cost of warehousing, sends almost all its goods overseas via the free zone. Another big advantage, of course, is the lower taxes involved in this type of operation.

## Sales Door Opens

**Marketing antibiotics for the preservation of fresh foods received substantial stimulus last week as both American Cyanamid and Charles Pfizer took major steps to start sales efforts.**

Cyanamid will soon launch a large advertising campaign on behalf of its Acronize process in *Life*, *Ladies Home Journal* and *Good Housekeeping*. Four-color ads and the Good Housekeeping Seal of Approval will be prominently featured. This campaign will be supported by promotion in food-processing media.

Almost simultaneous with Cyanamid's announcement, Pfizer applied for permission from the Food and Drug Administration to begin marketing of its oxytetracycline for poultry preservation.

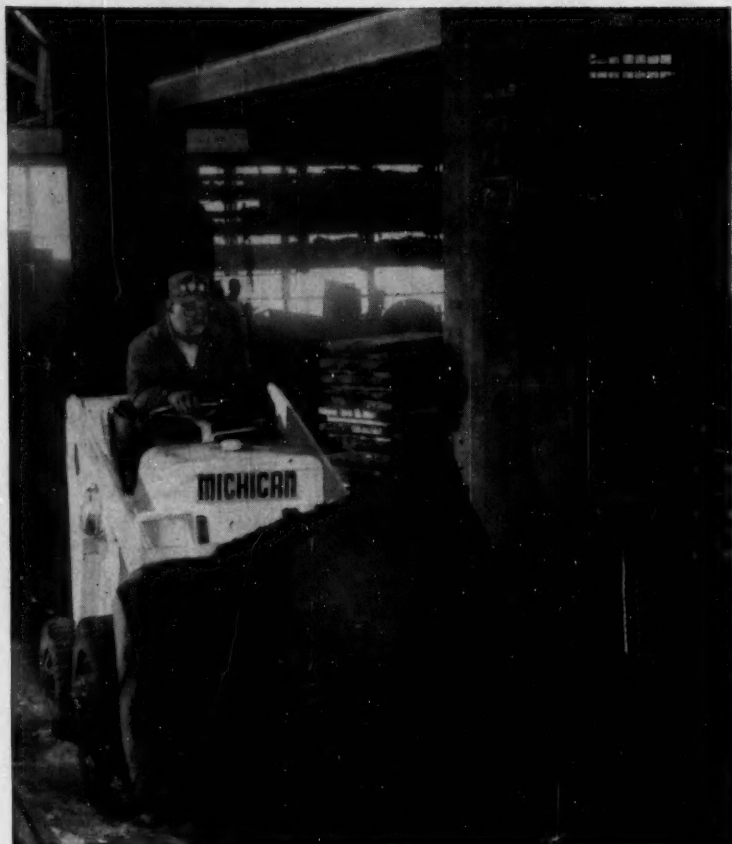
Meanwhile, the door to marketing activity is fast opening on the international scene, too. British health authorities are investigating the suitability of antibiotics in fish preservation. In Colombia, Cyanamid is just beginning full-scale promotion of chlortetracycline for meat preservation; Colombia approved this use of the process several months ago. And elsewhere, Cyanamid and Pfizer have asked approval for meat treating in most South American nations.

These developments indicate that the major marketing obstacles for antibiotics in meats and fish (*CW*, Mar. 24, p. 54) can probably be surmounted. Cyanamid's confidence in undertaking national distribution is backed by results from just-completed, "highly successful" test campaigns in three southern cities. Pfizer will get sales activities under way immediately if it secures FDA authorization.

But one potentially dark cloud has appeared on the horizon. FDA has quietly begun a check on the safety of the process as it is now being performed. Agents have collected samples of both untreated and treated poultry, will run tests to determine the quantity of antibiotic remaining after the fowl has been cooked. FDA officials attach no special significance to its investigation, term it "routine." Barring unexpected results from such tests, market development for antibiotics in poultry, at least, seems headed for success.

### Total Sales from the Colon Free Zone—1955

For consumption in Panama	\$3,633,316
For consumption in Canal Zone	\$1,466,663
To ships in transit	\$ 750,143
Re-exportation by sea	\$11,299,510
Re-exportation by air	\$12,296,295
Total	\$29,445,927



*Michigan Model 12B handles 300 tons per day . . .*

## The bonus in the bucket pays for this machine fast!

Take a close look at the photograph above—an action shot of a MICHIGAN Model 12B Tractor Shovel handling sand at a Chicago foundry. For this operation, the MICHIGAN was purchased to replace another loader of the same rated capacity. But the MICHIGAN moves substantially more tonnage than the other machine—approximately 300 tons of sand per day. The photo shows how the load is heaped-up well above the 15 cu. ft. capacity of the MICHIGAN bucket. This "bonus" tonnage in the bucket pays for the MICHIGAN fast.

**More power to dig.** With a 20 percent margin of weight and power over most machines of its rated capacity, the MICHIGAN digs its way into tough material where other

machines just spin their wheels. Low-level bucket action enables the MICHIGAN operator to carry the load low, with good visibility and safe center of gravity. Clark's exclusive power-shift transmission makes all shifts instantly—high, low or reverse—saves vital seconds on every cycle. This combination of features enables the MICHIGAN to dig bigger loads and move them faster.

**Write for demonstration.** Don't buy bulk handling equipment until you've seen the MICHIGAN 12B in your plant. No other machine can match the 12B's combination of features or the amount of work it will produce. Clip the coupon to your letterhead to arrange to see it; this machine simply invites your comparison!

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## SALES

### Rate Rules Easing?

Chemical companies exporting from the West Coast to Europe are likely to find future freight rate agreements with ocean carriers less restrictive. That's the upshot of a recent directive of the Federal Maritime Board to the Pacific Coast European Conference, an ocean carrier organization, ordering conference members to "cease and desist" from the practice of forcing companies with contract-rate agreements to guarantee that all export sales move on conference vessels.\*

The conference maintains a dual rate system. One rate is applicable to general shipments; the other, a contract rate about 10% less than the general rate, is given to shippers that agree to make all shipments with conference members.

Recently, the conference told companies that contract rate agreements applied to free-on-board (f.o.b.) and free-alongside-ship (f.a.s.) sales, not just cases in which the shipper maintains title to goods during shipment. And, added the conference, it would cancel the low rates unless all shipments from a company move on member carrier lines. Producing companies, however, argue that they have no control over f.o.b. and f.a.s. sales; the buyer selects the transportation.

FMB did not actually rule on the concept of applying contract rates to f.o.b. and f.a.s. sales. Rather, it said that the conference, in extending the scope of its present contract rate agreements, in effect produced a new agreement, and that this requires prior approval by FMB under terms of the Shipping Act of 1916.

Thus, the controversy is not yet settled. The conference can still try to get a ruling from FMB on the contents of the new agreement.

But the outlook for chemical and other shippers is bright. The board has ruled against two similar contract rate agreements within the past year. These decisions specified that companies did not violate exclusive cargo agreements on f.o.b. and f.a.s. sales when the name of the company making the sale did not appear on the bill of lading, and that sellers cannot be held responsible for action of buyers.

\*FMB's ban stems from a complaint by American Potash & Chemical Co. and Mitsui Steamship Co. against members of the conference (*CW*, May 7, '55, p. 54), although legal action was jettisoned when Mitsui later joined the carriers' organization.

# **DON'T SIGN THAT ORDER!**



## **SAVE MONEY ON 1956 NITROGEN CONTRACTS**

Freight represents a high percentage of your costs for nitrogen solutions, anhydrous ammonia and aqua ammonia. The completion of Sinclair's strategically located new plant in Hammond, Indiana, means a sharp reduction in freight costs for many nitrogen users located in the Mid-West.

Here's another big advantage! Sinclair's new facilities and vast new storage capacity make it possible to meet *your* production schedule — even during peak season. Two tank car fleets are held in readiness — one for exclusive use in shipping anhydrous ammonia, the other for nitrogen solutions.

**So don't sign that contract...** first find out how this new Sinclair plant in the heart of the Mid-West can cut your costs and delivery time of nitrogen supplies. Write or telephone...

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## Scoreboard on Price-Discrimination Laws

<b>Current Issue</b>	Senate Bill 11. This proposal would amend the Robinson-Patman Act to force manufacturers to give competing customers the same price on the same product.
<b>Leading proponents</b>	National Assn. of Retail Druggists, National Assn. of Retail Grocers, National Food Brokers Assn. and the National Congress of Petroleum Retailers.
<b>Leading opponents</b>	Manufacturing Chemists' Assn., National Assn. of Manufacturers, major petroleum companies, other large manufacturers.
<b>Argument for</b>	Distributors contend that discounts to selected customers place dealers not receiving the discount at a strong competitive disadvantage.
<b>Argument against</b>	Suppliers contend that the amendment would reduce—if not eliminate—price competition.
<b>Current status</b>	Proposal will come up for voting in the Senate in a few weeks. The House has already passed the bill.

## Price Confusion Coming

Despite staunch opposition from the Manufacturing Chemists' Assn. and other industrial organizations, a potentially explosive amendment to the antitrust laws stands an excellent chance of becoming law within the next few weeks.

Major chemical producers are fearful that passage of Senate Bill 11 will jeopardize the entire price structure of the chemical industry, and seriously endanger the legality of freight equalization practices.

Passage—and Presidential approval—is now expected as a result of these developments:

- Sudden swell of pressure for the bill from small business.
- A spectacular 393-to-3-vote victory for the proposal in the House.
- Desire of legislators to win votes of small businessmen in the nearing national elections by showing tangible support for pro-small business measures.
- Federal Trade Commission support for the bill.
- Apparent failure of tactics by the bill's opponents to delay its consideration long enough to prevent a Senate

vote before adjournment. Hearings have now been completed and the bill's supporters are pressing for a Senate decision.

Aim of the bill's backers is to change the Robinson-Patman Act so that the FTC can require suppliers to give customers who compete with each other the same price on the same product. The amendment would accomplish this goal by granting FTC authority to:

- Rule that different prices charged competing customers are discriminatory.
- Find that the market involved is "substantial" and thus that discriminations are illegal.
- Rule out the defense by a manufacturer that he is forced to give one customer a lower price in order to meet price competition. The "good faith" argument would be valid only if the effect of price discrimination did not "substantially" lessen competition or tend to create a monopoly in any line of commerce.

**Path to Chaos:** MCA is attacking the proposed law on the grounds that it will place the legality of pricing

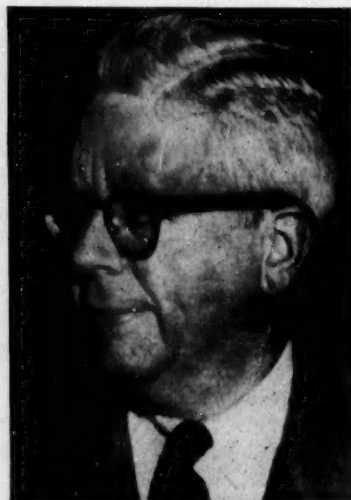
practices and price competition in hopeless confusion. Representing MCA, Attorney Henry H. Fowler told the Senate Antitrust Committee that the act would hurt and prevent price competition at the manufacturing level in the chemical industry.

Fowler stressed these considerations:

- Because chemicals from different manufacturers are often identical, terms of competition must center on price and service.
- The bill is aimed at protecting small business at wholesale and retail levels.
- Manufacturers could probably not grant (under the new act) selective price discounts to industrial consumers if retailers or wholesalers would ultimately be injured.
- Most sales of chemical products are made to other manufacturers who process them into many different end products.
- Because of the diversity of end products made from chemical raw materials, a chemical company could not possibly accurately estimate the effect that matching another's price at the processing level would have at the retail level.

• Terminology in the proposed law does not explicitly state whether freight equalization practices could be viewed as price discrimination.

For these reasons, Fowler argued, MCA believes that the amendment would threaten most price competition in the industry. And, added Fowler,

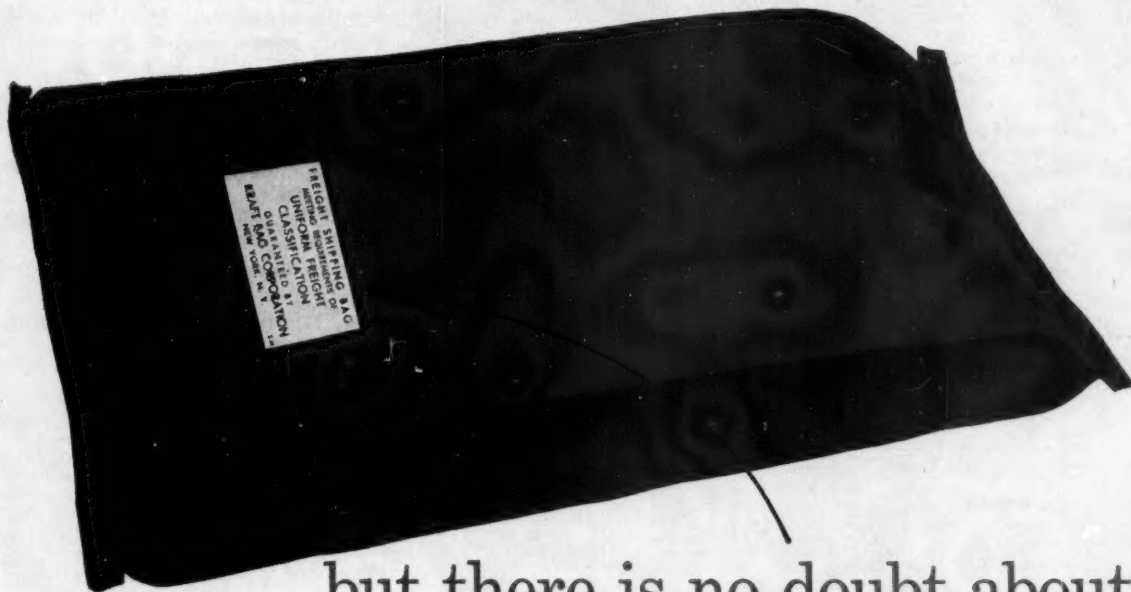


**MCA's FOWLER:** New bill may aid retailers and wholesalers, but it won't help the chemical industry.

# Cigars and Multiwall Bags



Kraft Bag Corporation, as a manufacturer of multiwall bags, is in the same position as the cigar manufacturer who complained that everything to be said about his 25c cigars had already been said about 5-centers!



...but there is no doubt about the quality of the multiwall bags that bear the Kraft Bag Corporation stamp!



Our completely integrated plants and modern facilities producing every type of heavy-duty valve or open mouth bag, are second to none!

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PIONEERS IN HYDROGEN COMPOUNDS

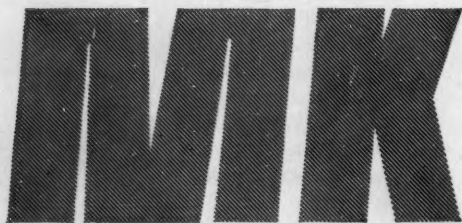
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## SALES

if the proposed bill is the only way that can be found to insulate resellers from price competition on the manufacturing level, the chemical industry should be exempted from the act.

**Background:** The current attempt to revise the Robinson-Patman Act stems originally from a 1940 action of the Federal Trade Commission, in which Standard Oil Co. (Ind.) was charged with violating the act when it gave selected jobber-retailers a reduced price on gasoline. FTC rejected Standard's defense argument (based on section 2-B of the act) that the price cuts were legal because they were made in "good faith" to meet the equally low price offered these customers by other suppliers. In 1951, the Supreme Court reversed FTC's decision, upheld the validity of Standard's "good faith" defense. FTC then interpreted the court's decision to mean that the "good faith" defense was merely recognized as a legal principle, that Standard had not established it was acting in "good faith." Last May, the Federal Court of Appeals in Chicago overturned FTC's second ruling on the Standard Oil case.

The amendment adopted by the House and now nearing a Senate vote would, at the least, upset the 1951 ruling of the Supreme Court. When the roll call comes—now almost certain—Senators will have to cast a vote that will be interpreted by thousands in an election year as simply "for" or "against" small business.

## COMPETITION.

- American Potash & Chemical Corp. is establishing offices at Washington, D. C., to facilitate its dealings with government agencies.

- Chemstrand Corp. has closed its Philadelphia district sales office and will service the area west of Pittsburgh from a new office in Akron, O.

- Allied Chemical International Corp. has designated Canada Colors and Chemicals, Ltd. (Toronto) as a distributor for A-C Polyethylene.

- Newport Industries, Inc. (New York) has named Aromatic Products, Inc. (New York) exclusive selling agents for D'L-menthol U.S.P. and Thymol N.F.

- American Viscose Corp. has appointed the Burkart-Schier Chemical Co. (Chattanooga) sole sales agent for textile chemicals in a 17-state area.



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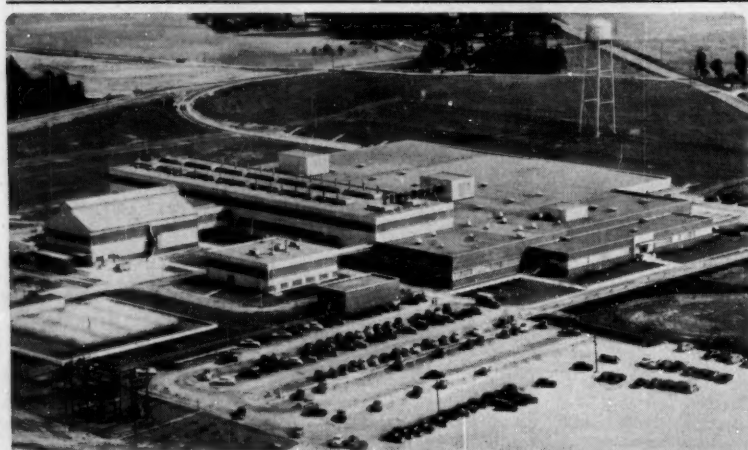
**INOSITOL N. F.**—A significant Vitamin-B complex component and lipotropic agent for your ethical formulations.

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**SODIUM PHYTATE**—A neutral salt, particularly useful when a sequestering agent in dry form is desired.

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## SALES

### DATA DIGEST

• **Electrochemicals:** Two bulletins, one on sodium and potassium chlorate, the other on ammonium and potassium perchlorate and manganese dioxide, contain information of interest to the pulp and paper, agricultural chemical, explosives and battery industries. American Potash & Chemical Corp. (Los Angeles).

• **Polyester resins:** Brochure gives detailed information on use of company's polyesters and accessory products in plastic molding. Interchemical Corp. (Newark, N. J.).

• **Anhydrous aluminum chloride:** Fact sheet outlines specifications, physical properties and uses of the salt in making ethyl chloride, styrene, synthetic detergent alkylates, butyl rubber, gasoline, dyestuffs and other products. Solvay Process Division, Allied Chemical & Dye Corp. (N.Y.).

• **Lauric acid:** Brochure gives technical information on lauric acid and its uses. Aceto Chemical Co. (Flushing, N. Y.).

• **Rigid polyvinyl chloride:** 16-p. brochure provides detailed information on a polyvinyl chloride resin, Vygen 2201, compounded especially for calendering operations. General Tire and Rubber Co. (Akron, O.).

• **Clay binder:** 10-p. booklet delineates use of sodium lignosulfonates as a binder for structural clay products. Applications are suggested in tile, brick, porcelain and other materials. West Virginia Pulp and Paper Co. (Charleston A, S. C.).

• **Sodium chlorite:** 12-p. brochure gives facts on use in acid and alkaline bleaching, oxidation of vat and sulfur dyes and dyestuff stripping. Olin Mathieson Chemical Corp. (Baltimore).

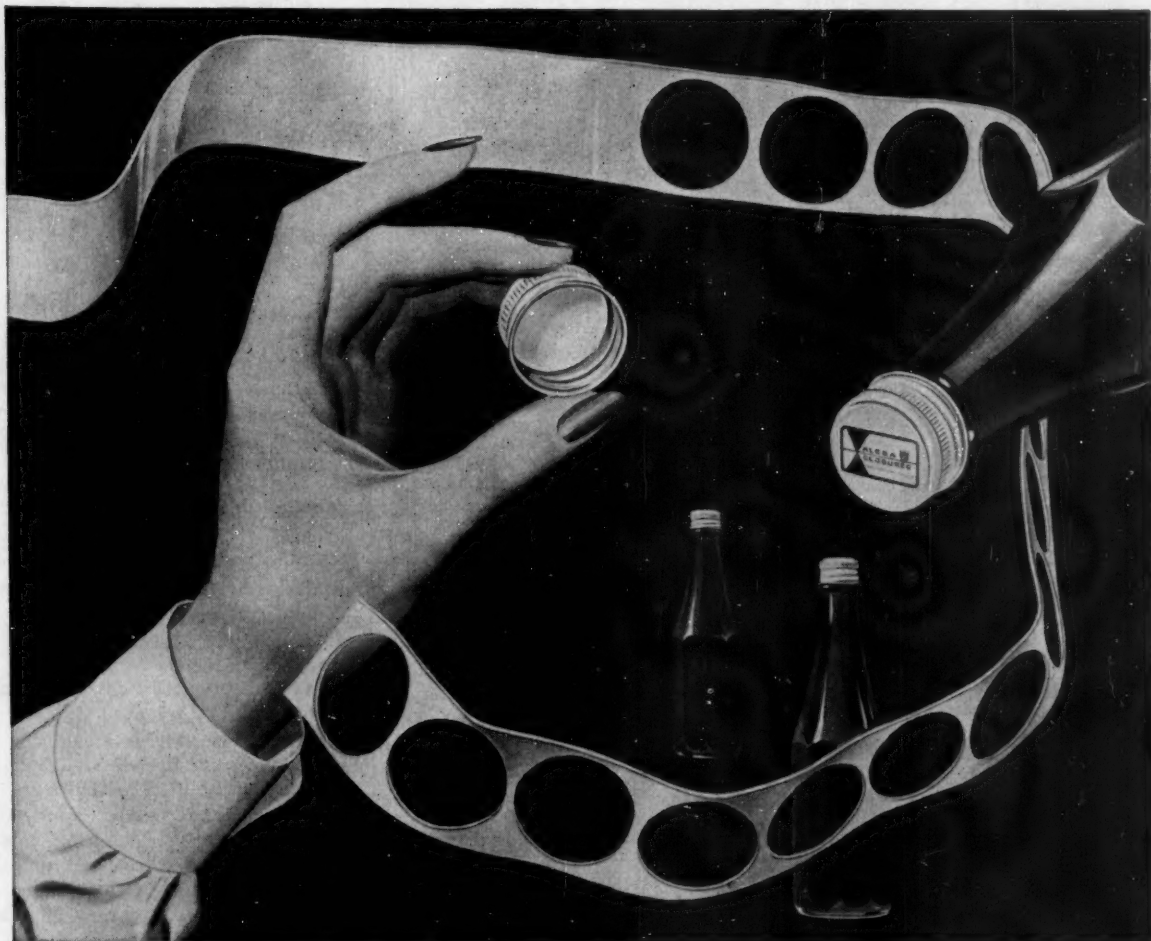
• **Vinyl copolymers:** Booklet provides detailed information on use of polyvinyl acetate emulsions in tint bases, exterior and interior paints, interior tint bases and primer sealers. National Starch Products, Inc. (New York).

• **Colors for plastics:** Two bulletins offer data on application of coloring agents for plastics. No. 175—calibrated color pastes for vinyl compounding; No. 220—granular color concentrates for polyethylene. Claremont Pigment Dispersion Corp. (Roslyn Heights, N. Y.).

• **Hydrogen peroxide propellant:** Bulletin describes use in propelling

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SO popular is Alcoa's new HyTop closure that nearly all major brands of catsup today wear this new cap.

Now these bottles are easy to open. The white, clean-looking liner inside the closure, made of Geon polyvinyl materials, is exceptionally smooth. So a dainty twist removes the cap.

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For complete information write Dept. S-8, B.F. Goodrich Chemical

Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ont.



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**Pittsburgh Plate Glass Co.**Corona Chemical Division  
Moorestown, New Jersey**SALES**

submarines, rockets, missiles, helicopters, airplanes, and steam turbo-pumps. Pertinent physical data is also supplied. Becco Chemical Division, Food Machinery and Chemical Corp. (Buffalo).

• **Steel containers:** 24-p. brochure describes 1-ton shipping containers claimed to be suitable for handling compressed gases such as chlorine, ammonia and sulfur dioxide. Physical data for chlorine, and safety suggestions for gas handling are included. Columbian Boiler Co. (Columbiana, O.).

• **Pigment dispersions:** 4-p. folder supplies formulation data for 16 different product classifications, covering application of pastes and chips in various vehicles. Mixing suggestions and data on universal tinting bases, plastic colorants and transparent coating materials are also included. Pennsylvania Color & Chemical Co. (Philadelphia).

• **Box handling:** Booklet furnishes detailed information on stacking and loading corrugated shipping boxes. Hinde & Dauch (Sandusky, O.).

Available from the Census Bureau, Washington, D. C.:

• **Paints and varnish:** Manufacturing, shipment, production and inventory statistics for 1955. MIGJ-05, 10¢.

• **Asphalt, tar roofing products:** Manufacturing, shipment, production and inventory data. M26D-05, 10¢.

Available from the Dept. of Commerce, Washington, D. C.:

• **Trade lists:** Separate tabulations of foreign business firms that handle specific product lines. Uruguay and British Guiana—importers and distributors of medicinals and toilet preparations; New Zealand—importers of naval stores; Union of South Africa—producers, importers and dealers in paints, varnishes and pigments. Each, \$2.

• **Pharmaceutical regulations:** Separate publications outline laws governing pharmaceuticals in Egypt, Pakistan and the Union of South Africa. Each, 10¢.

• **Petrochemical plant location:** 104-p. book (\$3) analyzes factors and trends in plant site selection practices of the petrochemical industry.

• **Packaging tapes:** Bulletin provides facts about use, specifications, and types of pressure-sensitive and gummed tapes. BSB 141, 10¢.



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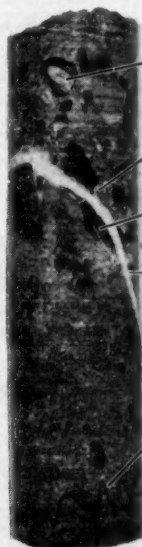
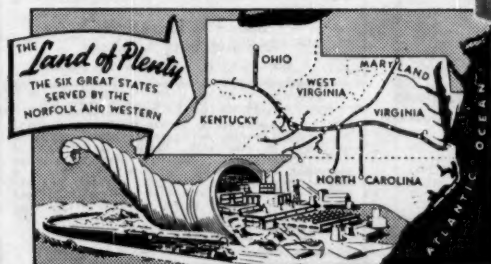
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And here are typical analyses \*

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA (SiO <sub>2</sub> ) . . . . .	.34%	.30%	.34%
IRON OXIDE (Fe <sub>2</sub> O <sub>3</sub> ) . . . . .	.072	.043	.049
ALUMINA (Al <sub>2</sub> O <sub>3</sub> ) . . . . .	.21	.20	.19
LIME (CaO) . . . . .	55.00	54.90	55.40
MAGNESIA (MgO) . . . . .	.65	.62	.51
SULPHUR (S) . . . . .	.012	.011	.015
PHOSPHORUS (P) . . . . .	.006	.006	.009
IGNITION LOSS . . . . .	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated) . . . . .	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated) . . . . .	1.36	1.30	1.07

\*Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

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**JOHN F. CROWTHER,**  
Sales Department  
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P. O. Box 545, Wichita, Kansas"

### CHEMICAL MARKET ANALYSIS

To keep up with today's needs and ahead of tomorrow's foreseeable demands our progressive manufacturing organization is establishing a new Development Department and desires a graduate chemist or chemical engineer with 2-3 years market analysis experience. This position involves market surveys plus the planning and co-ordination of product development.

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Class. Adv. Div.,  
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### PETROCHEMICAL MARKET DEVELOPMENT

Petrochemical Department of major oil company planning diversification and expansions into new fields including plastics. Need man with sound knowledge of processes, applications, customer service and several years' experience in selling and development of new markets for one or more types of plastics. At present do not manufacture any plastic but have raw materials sources. To qualify for this position, the applicant must be able to assume a major role in guiding the company into the plastics field. This is an unusual opportunity to get in at the start of diversification program, to help in selecting the most promising products to manufacture and market and to assist in building up a technical service and selling organization. Location, Houston, Texas. Salary open. Please send detailed resumé of education and experience to

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Chemical manufacturer located New Jersey near New York City wants experienced man to set up and operate small package department for household chemicals, fertilizers, etc. Knowledge of trade desirable. Excellent opportunity, new department. Write experience, salary requirements, etc. to P-2386, Chemical Week. All replies strictly confidential.

Opportunity for a chemist experienced in water treatment formulations for boilers, air conditioning systems and iron sequestration to become associated with a growing company in Florida. Please submit qualifications, experience and references to P-2387, Chemical Week.

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Management: Chem Sales/Market Development large company, national experience in sales, management, marketing, training, contract negotiation, advertising, forecasting, etc. Can set up new or manage existing sales and dev. program. Modest 5-digit salary. BS Chem, age 39. PW-2344, Chemical Week.

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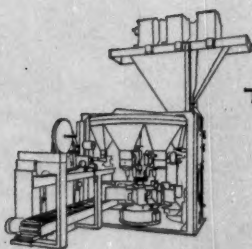
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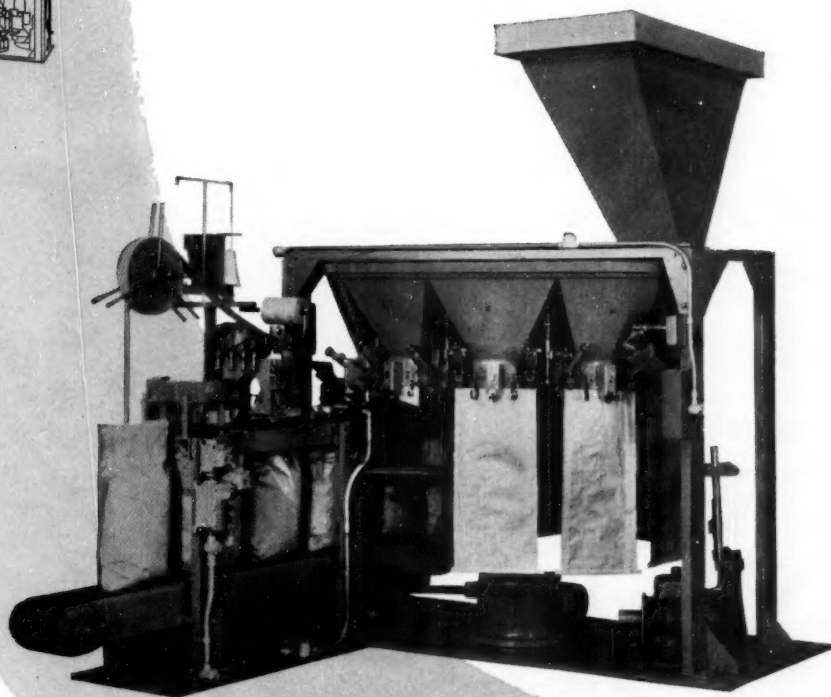
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